American Aviation

The Air Industry's Only Independent Magazine **FEB. 15, 1950**

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Advice to the CAB

IN A SPEECH the other day CAB Member Russell Adams indicated quite clearly that the Board would continue to pursue its policy of ordering investigations of airlines which it considers to be uneconomic in route structure and of route segments which it thinks have excessive competition.

by W. W. P.

The purpose of these investigations, the Board has said, is to correct deficiencies in the air route pattern and to reduce the dependency on mail pay of the entire airline network. To this end there can be little disagreement. Everyone wants the most efficient and the most economical airline system possible under our present system of private enterprise.

In his strong feeling that "something must be done," Mr. Adams proposes that industry itself assume the obligation of initiating corrective measures. He admits quite frankly, as other Board members have admitted, that the Board does not have the powers under the law to force mergers and radical route adjustments. He hints that unless industry does take the initiative, the Board ultimately will have to seek the necessary powers from Congress to re-make the air transport system.

It was on September 28, 1948, that the Board instituted its first investigation order, against National Airlines. The hearing on the expanded proceeding resulting from this 1948 order is now scheduled to start March 6. A year ago the Board ordered investigations of Western, Northeast and Colonial, but no hearing dates have ever been set. Mr. Adams in his recent speech indicated there may be "one or two" other airlines needing similar inquiries.

We would like to give the CAB a little friendly counsel in its current efforts to correct the deficiencies which it believes to exist in the air route pattern.

1. May Imperil the Act

First and foremost, we are certain the CAB, as well as the industry itself, does not want to upset the Civil Aeronautics Act of 1938. It is as fine an Act as any industry could ever expect to obtain from Congress. If there is anything wrong, it is with the manner in which the Act has been administered. No legislative move now would bring any advantages. The Act as it stands must be retained.

We are not [illegible] that the CAB fully

(Turn to page 8)

Heads UAL Traffic Functions

Ray W. Ireland, former vice president-administration for United Air Lines, has been named vice president-traffic administration in a policy move re-aligning some of UAL's top sales, advertising and traffic functions. Ireland's aviation career dates back to 1926 when he joined National Air Transport, a predecessor division of United. He was elected a v.p. of the airline in 1945 upon return from service with the Air Transport Command. (See page 42).

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BACKGROUND & TRENDS

Prototype Outlook

The outlook for **government aid in development of prototype aircraft** now seems to boil down to this: President Truman, through the Bureau of the Budget, has turned down a proposed prototype bill presented by the Defense Department. It provided that the Air Force with separate funds, should bear the expense of developing two cargo or transport prototypes, one adapted primarily for military, the other for civilian use.

Cost is estimated at $30 million. However, this does not mean that there's no chance for government aid at this session of Congress. There are reasons to believe that the Budget Bureau will seriously consider supporting: (1) joint **military-civil operation** of North American B-45 jets under simulated and actual conditions on the civil airways, to provide industry with jet experience, and (2) government aid in **a testing program** (as contrasted with a development program) of new jet transport prototypes built primarily for civil use. This, of course, will mean that manufacturers will have their own money in the actual construction, with government aid confined to testing (a considerable item). The testing proposal has been favored by Air Coordinating Committee (with exception of Defense Department). The latter evidently wants its own bill or nothing. Secretary of the Air Force Stuart Symington told the Senate Interstate and Foreign Commerce Committee that because of Budget's turn-down, Defense won't ask Congress to adopt its program and won't "support any other bill which provides for prototype development at government expense." However, observers believe that in spite of this, chances for some type of government aid are pretty good.

O'Connell Speaks Bluntly

CAB Chairman Joseph J. O'Connell, Jr., spoke bluntly in a recent speech on **jet transports and the need for government aid** in their development. Jet transports aren't being built because the government can't make up its mind on aid, and because manufacturers don't want to risk development on their own, he asserted. When he took over as CAB chairman he was "naive" enough to think that because the military had jets, they might be quickly adapted for commercial use, he said, adding, however, that manufacturers and airlines told him jets were 10 years away. "Exactly 18 months later the British and the Canadians both test flew large jet transports and are now peddling them. . . . We might well ponder the question of how American aviation got caught flat-footed. . . . So long as military orders roll in and are virtually riskless, and while Washington debates what it is going to do, there is little reason to believe that any manufacturer will enter actively into the jet transport field." He left little doubt as to where he stood: "The time has come when **any** answer from the government, almost regardless of what it is, is of the utmost importance."

'Best' Airport for Washington?

Sen. Ed Johnson (D., Colo.), chairman of the Senate Interstate and Foreign Commerce committee, plans to push hard his bill (S. 456) for construction of a **new commercial airport near the District of Columbia** which he says will be the "best in the country." He thinks the answer to traffic congestion in Washington area is another airport rather than closing of military operations at Bolling Field and Anacostia, across the Potomac from Washington National Airport. Air Force officials have said, however, that they don't consider closeness of the fields inherently dangerous. Under Johnson's plan, WNA would become principally a cargo terminal following opening of a new field.

Both the Commerce Department and Budget Bureau have thrown their weight behind the move for early construction of a second major airport for Washington. Commerce officials indicated belief that traffic already has reached saturation and the airport could not possibly handle the 40% increase expected by 1955.

Readying Airports for Emergency

Department of Defense wants the **planned development of civil airports** at certain locations to include adequate provisions for expansion in an emergency without interference from other developments or interests in the area. Revision of the Federal Airport Act will probably be necessary to accomplish this. Defense Dept. is consulting with CAA on the matter.

U. S. Okays Simplified Travel Rules

The U. S. will conform as closely as possible with provisions of Annex 9 to the convention on international civil aviation. The annex, adopted by the ICAO Council, becomes effective March 1 and aims at simplification and standardization of customs, immigration, public health, agricultural quarantine rules and procedures, etc. U. S. will deviate only where such action is required by reason of lack of appropriations or because of contrary provisions in existing law. In these cases it will try to get necessary funds and to have changes made in the law so that complete conformance will be possible.

Emphasis on Research

Air Force is putting **increased emphasis on long-range research and development** activities. Recently established were a new staff section and an additional major command, the Research and Development Command. Initially RDC will confine itself mostly to overall planning but eventually it will take over all research and development functions now operating under other major Air Staff sections. AF hopes the new system will be more efficient and economical. Maj. Gen. Gordon P. Saville, former director of requirements, becomes deputy chief of staff for research and development, and Maj. Gen. David Schlatter, former senior AF member of the military liaison committee to the Atomic Energy Committee, is commanding general of the new command.

Among the Airlines

There probably won't be a CAB decision in the **American Overseas-Pan American merger case** until June, although Pan Am and American are pushing the Board to move faster. They say CAB wants mergers but moves too slow in processing them. This case, however, is one of the most important to come before CAB, and it wants to get views of other government departments. CAB will reach its own decision before forwarding the case to the White House. If President's final decision differs, that's up to him. . . . Major part of **British Overseas Airways Corp.'s** reorganization is completed. There has been "drastic correction of overstaffing at all levels," says Sir Miles Thomas, chairman. Personnel has been cut from 25,464 to 17,250 since March, 1947. . . . Target date for retirement of **TWA's Boeing Stratoliners** is July 1. . . . There are now **nearly 200 bills** before Congress for reduction or repeal of wartime excise taxes, most of which include the transportation tax.

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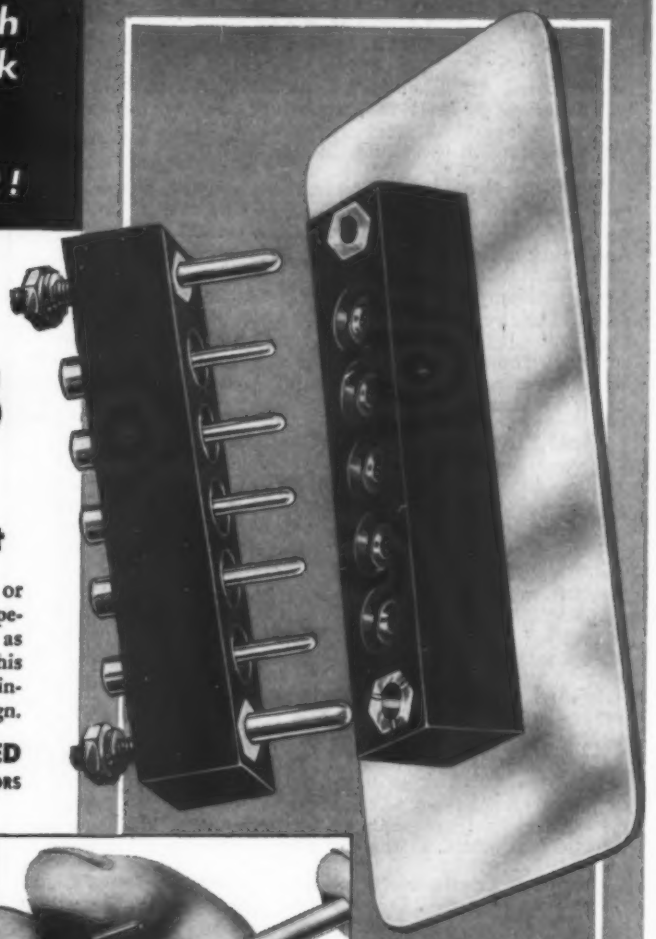

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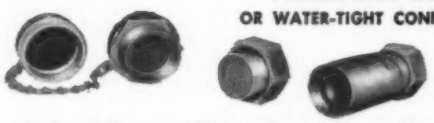

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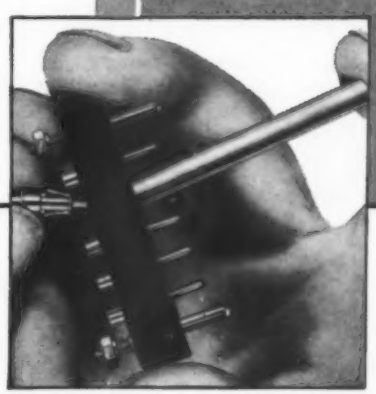

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News in Brief

IATA in S. F.: The annual general meeting of the International Air Transport Association will be held in San Francisco in early October, a surprise decision since several other cities were expected to land this first IATA meeting in the United States.

Holding the Line: The airline general passenger fare level will not be allowed to decline merely to attract the large potential of air coach traffic, the Civil Aeronautics Board declared in its annual report to Congress. Reductions in over-all fare levels will be permitted only on the basis of reduced costs, CAB said. The report reiterated CAB's endorsement of prototype legislation, asked for broader exemption authority than CAB now possesses, repeated the standing request for regulatory control over security issues of air carriers.

Mail Pay Fight: The Washington law firm of Sullivan, Bernard and Shea, retained by a group of smaller air carriers to oppose legislation which would separate so-called subsidies from mail pay, will receive $30,000 for six months' work, according to a statement filed with the clerk of the House of Representatives under provisions of the Lobbying Act. The following 10 carriers are listed in the statement as being represented by the firm: Braniff, Capital, Chicago and Southern, Colonial, Delta, Mid-Continent, Northeast, Northwest, Piedmont, and Southern Airlines.

FAMA into N. Y.: Aerolineas Argentinas FAMA will begin weekly DC-6 service shortly on its newly-awarded route between Buenos Aires and New York. FAMA, which was granted a six-month foreign permit on January 23, plans to increase weekly frequency later to three round-trips. The carrier has been operating for more than three years in South America and across the South Atlantic to Lisbon, Paris, Rome, and London.

Air Taxi Conference: Joseph Garside, president, E. W. Wiggins Airways, Norwood, Mass., was elected president of the National Air Taxi Conference at initial meeting in Washington on February 6. Other officers include Robert Northington, vice president, Piedmont Aviation, Inc., Winston-Salem, N. C., as first v.p., and Samuel Freeman, president, Somerset Air Service, Inc., Badminster, N. J., as second v.p. An executive v.p. will be appointed by these officers later.

NATC has affiliated with the National Aviation Trades Association, with all regular members required to hold NATA membership. Two other classes of members, associate and contributory, need not belong to NATA.

Government Fleet: Federal government agencies plan to purchase 90 new aircraft in civil categories under fiscal 1951 budget. Eleven departments by the end of June, 1950, will have acquired and put into use a total of 1,119 airplanes, exclusive of those used for military purposes.

Second Star Route: The second Air Star route advertised under the new Air Star route law has been awarded to H. C. Cockett, a small irregular operator, 1517 Leilani Street, Honolulu, for service between Honolulu and the leper colony at Kalaupapa, Molokai, a distance of 54 miles. Cockett, one of five bidders, bid 15c per airplane mile for a base load of 500 pounds and 2¾c for each 100 pounds excess. The first Air Star route recently was awarded to Joseph A. McPhillips, operator of McPhillips Flying Service, Charlevoix, Mich.

Tolman Leaves EAL: Prescott A. Tolman has resigned as general sales manager of Eastern Air Lines to enter business for himself. A 15-year veteran with EAL, Tolman will leave the company the latter part of this month.

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EDITORIAL

(CONTINUED FROM PAGE 1)

understands that it imperils the Act every time it shocks the industry and airline stockholders with new and broad investigation orders—orders which it admits that it cannot back up with enforcement powers. We are not sure the CAB fully realizes that *each investigation is in reality an investigation of itself.* In seeking to correct existing deficiencies the CAB is actually seeking to correct its own mistakes.

We say this not to belabor the Board again for past errors of judgment. Perfect forecasting and perfect planning in aviation is a goal impossible to attain. Industry's judgment has often been just as far amiss as the CAB's. Yet for this very reason the burden for corrections cannot be placed *in toto* on industry when it is the CAB that is the regulatory and the deciding agency. The Board's own record has been all too noteworthy for its whims and inconsistencies.

What we do say is that Congress currently has the impression that something is wrong with the airlines, due in part at least to the financial troubles of early 1949 which were directly traceable to the Board's delay in adjusting mail pay to reasonable levels. And due in part to the shocks which the CAB issues in the form of investigation orders. By making enough fuss over current deficiencies, the CAB might well lead itself and the industry into a full-scale investigation by Congress. And in any such inquiry the CAB is apt to come out considerably blackened, to say nothing of the repercussions on the airlines. This is no time to imperil the Civil Aeronautics Act. No matter how many accessories to the crime a Congressional inquiry may line up, the biggest sentence after conviction will go to the CAB because CAB made all of the decisions.

2. Get House in Order

Another bit of friendly counsel is for the Board to get its own house in order. By moving ahead more rapidly on the raft of pending proceedings, the Board might well find many deficiencies corrected if the proceedings are acted upon promptly and wisely.

Embarking on broad investigations without expediting pending matters is like an industrial firm calling in high-priced efficiency experts before the company straightens out defects and inefficiencies which are obvious and known. Investigations are conducted, and efficiency experts called in, to discover what is not known and what is not obvious.

In his speech Mr. Adams was frank to admit that there isn't too much wrong with the existing airline network. A few relatively minor operations are all that are needed, he says. But how many of these corrections are already involved in pending proceedings? We suspect quite a few.

3. A Better Approach

A third suggestion is a changed approach by the Board in its relations with the industry it regulates. The CAB has issued a general invitation to the airlines to come forth with corrective proposals but it makes no guarantee that it will approve them when made.

Why not a more specific invitation, formally issued to each airline with a time limit on replies, to submit in a few pages the specific, concrete suggestions which each airline thinks would bring about greater efficiency and economy, and which can be acted on expeditiously by the Board with its existing powers. Hundreds of small quickly-made corrections, saving in the aggregate large sums of mail pay, might well be the result of this more specific approach.

Industry today has a feeling of futility about making proposals. Time lapses between filing of applications and decisions are much too long. CAB must give a better indication of good faith. If all airlines submitted proposals at the same time, CAB might not find a complete pattern but it might find many of its wishes answered.

4. A Feeder Policy

As a final bit of counsel, the Board must clarify its feeder policy. One of the greatest steps toward moving trunklines into the self-sufficient category could be the transfer of small towns to the feeders, or the entire elimination of costly small stops in the absence of feeder service. The Board seems to be reaching the idea that feeders can give better and more economical service to small towns. We believe this is a sound trend.

But trunklines are reluctant to apply for suspension of service without having some assurance from CAB that this is in line with a firm policy. No trunkline wants to abandon a stop which a competitive trunkline might grab up. Without a lot of hullabaloo and scare-headline investigations, CAB has within its powers the means of clarifying a situation which is, today, inexcusably confused.

A recent test case was Chicago and Southern Air Lines which applied for suspension at Peoria, Ill., an unprofitable stop. CAB approved. Just lately Northwest Airlines has filed for suspension of three local stops in Wisconsin, towns served now by Wisconsin Central, the certificated feeder. Approval of suspension means removal of losses for Northwest and means net gains for the feeder. All major trunklines have been discussing the elimination of unprofitable stops, but the answer is up to CAB. Industry is waiting for the cue from headquarters.

In conclusion it seems to us that CAB is doing some fairly straight thinking—or at least exploration—of the major economic and air route problems. But in trying to find solutions it may be making things difficult both for itself and industry. It has alarmed unduly the Congress, the companies and the stockholders. It is thinking too much about a new house which will never be built and not enough about making repairs quickly to keep the house livable.

CAB really needs no more powers and no more staff. It merely needs to bring itself closer to the industry and its own proceedings files and get caught up with what's in the mill. Every time it has had a chance to take a crack at a big problem, it has compromised and backed away. This will happen with all big investigations. Meantime there is much corrective action that can be taken without more staff and more legislation.

WAYNE W. PARRISH

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Volume 13 Number 18

Greater Built-in Plane Safety Urged by IAS Engineer

By James J. Haggerty, Jr.

Are American aircraft manufacturers building enough passenger protection into their planes?

William I. Stieglitz, aircraft engineer of Republic Aviation Corp., does not think so, and he told the Air Transport Section of the Institute of the Aeronautical Sciences, at the Institute's 18th Annual Meeting in New York, January 25, that 25% of all crash fatalities which occurred in scheduled airline accidents between 1938 and 1948 might have been averted if adequate "crashworthiness" had been incorporated in the design of the transport aircraft involved in these accidents.

Present crash protection is inadequate, Stieglitz said, and he called for "a reorientation of the attitude of the aircraft designer and abandonment of the polite fiction that transport aircraft do not have accidents."

Stieglitz based his 25% figure on the assumption that adequate crashworthiness could have effected 100% passenger survival in those accidents classed as "survivable." A survivable accident, by his definition, was one in which one or more passengers actually did survive.

The possibility that 100% of the fatalities in survivable accidents might have been averted may not be realistic; however, this is balanced, Stieglitz points out, by the fact that some of the accidents wherein no one survived might actually have been survivable in the broader sense of the word.

Better Safety Rate

A Stieglitz survey, based on Civil Aeronautics Board statistical records, showed that 49 fatal accidents had occurred in the 11-year period from 1938 to 1948. The total number of fatalities in these accidents was 672, of which 169 (roughly the 25% mentioned) occurred in survivable crashes.

If better crashworthiness characteristics in the aircraft had saved those 169 persons, the airlines' fatality rate would have been 1.6 per 100,000,000 passenger miles instead of the actual 2.2, Stieglitz said. In addition, the rate would have reached a low of 0.27 in 1939 and 0.36 in 1943. Such rates are directly comparable to those of the railroads.

The Republic engineer feels that the minimum crash load factor for any airplane should be 20 G, that is, the airplane should be so designed that it can withstand a deceleration load of 20 times the weight of the average passenger. Forty G, he states, would be more desirable. Stieglitz pointed out, in his IAS paper, that the Navy demands a 40 G minimum, while the Royal Air Force and the Australian Department of Civil Aviation have specified 25 G as minimum requirements. He contrasted this with CAB's requirement for transport aircraft of only 6 G.

Is it worthwhile to build in this protection? How much deceleration force can the human body take? Considerably more than 40 G, Stieglitz feels. He cited a glider accident involving a deceleration of at least 26 G with not the slightest injury to its occupant, and also the Air Force's tests with the Northrop deceleration sled at Edwards AFB, Muroc, Calif., in which human volunteers had undergone decelerations of 35 G with no ill effects. He added that, in free fall studies, there have been cases of survival, with moderate injury, where decelerations were close to 200 G.

Passenger Protection

Stieglitz has some suggestions for better crashworthiness, including stronger safety belts and seats more firmly anchored to the floor. These, however, would not protect against head injuries, since even under moderate G loads the passenger jack-knifes over the belt unless restrained by shoulder harness.

It is obviously impractical to require airline passengers to wear shoulder harness, Stieglitz admits, but he believes that reasonable protection can be provided by properly designed seat backs. The use of light, sheet-metal structure, well upholstered, instead of a rigid tubular structure, would go a long way toward eliminating head injuries.

Another big factor in passenger protection, according to Stieglitz, is the use of rearward facing seats. The Republic engineer does not think that passengers would object to riding backward, and he cites the report of a group of the R. A. F. Transport Command, which operated with the rearward seating arrangement for one year. The group found, from questioning its passengers, that:

a) only one passenger in five objects to facing backwards, and the majority strongly prefer it;
b) 99% of the passengers like the view from the windows better;
c) one passenger in three feels less airsick when riding backwards and the other found no difference;
d) bumps are less noticeable, and
e) noise is less noticeable.

The big objection to the building-in of increased crashworthiness, Stieglitz said, is the weight penalty involved, but analysis reveals that the penalty is extremely small. Engineering studies show that the total weight penalty involved in providing 20 G crash protection in a plane such as the Republic Rainbow would have been no more than 200 to 250 pounds. Stieglitz pointed out that life rafts and preservers carried in the same airplane on overwater flights would weigh 500 pounds and no one would consider eliminating these emergency provisions even though there has never been a ditching of a land-plane in scheduled over-water operation by an American flag carrier.

"The effect of a reduction in fatality rates on public acceptance of flying can more than offset any economic loss entailed in the increase in weight," Steiglitz concludes.

10 Sessions

The four-day IAS meeting, held at the Hotel Astor, was divided into 10 sessions. On Monday, January 23, the Rotating Wing Aircraft (chairman, Alexander Klemin, president, American Helicopter Society) and Instruments (chairman, Richard M. Mock, president, Lear, Inc.) sessions were held simultaneously in the morning. In the afternoon, George

Required Crash Load Factors

Agency	Crash Load Factor	Remarks
U. S. Air Force	17 G	Ultimate
U. S. Navy	40 G	Ultimate, introduced 1945
Royal Air Force	25 G	40 G ultimate
Civil Aeronautics Board	6 G	Ultimate, transport category
Civil Aeronautics Board	9 G	Ultimate, non-transport category
Australian Department of Civil Aviation	25 G	Presently proposed

This chart, prepared by William I. Stieglitz of Republic Aviation Corp., illustrates the wide discrepancies in the crash load factors required by various aircraft regulating agencies.

Forward or Aft—This is the new seat, built by Weber Showcase and Fixture Co., which will be installed in the new Lockheed Constellations now on order for Trans World Airline and Chicago and Southern Air Lines. The seat is reversible in flight by the stewardess. This will make it possible to use the seats in their normal forward facing position or swing them around to accommodate parties of four. It will also make it possible to gain the advantages of the rearward facing seat in the event of a forced landing without requiring that the passenger face rearward at all times. This represents the first use of a seat of this type in modern transport airplanes.

S. Schairer of Boeing Airplane Co. chairmanned the first of three Aerodynamics sessions.

The second Aerodynamics session, with Arnold M. Kuethe of Air Materiel Command serving as chairman, was held Tuesday morning, January 24. Luncheon, at which Rear Adm. C. M. Bolster, Assistant Chief for Research and Development, Navy Bureau of Aeronautics, was guest speaker, was followed by the third Aerodynamics session, chairmanned by C. E. Pappas of Republic Aviation Corp., and the Aeroelasticity session, chairmanned by Martin Goland of Midwest Research Institute.

The third day's meeting opened with the Meteorology (chairman, Capt. H. T. Orville, USN, president of the American Meteorological Society) and Structures (chairman, Ira G. Hedrick, Grumman Aircraft Engineering Corp.) sessions, held simultaneously in the morning. Maj. Gen. Donald L. Putt, assistant to the Air Force's Deputy Chief of Staff for Research and Development, was guest speaker at luncheon. The Aircraft Design session, chairmanned by W. B. Bergen, chief engineer of The Glenn L. Martin Co., was held in the afternoon, and the Air Transport session was held in the evening, with Jerome Lederer, director, Flight Safety Foundation, serving as chairman.

A symposium on jet installation design problems, chairmanned by S. T. Robinson of Sanderson & Porter, took up the morning of the fourth day. The meeting concluded with an inspection trip of Wright Aeronautical Corp., Wood-Ridge, N. J., in the afternoon.

AF Flight Plan Filing Program Draws Protests

First steps in a program "leading to the positive identification of all aircraft operating in the air space over the U. S. under operating conditions which might constitute a threat to security" have been announced by the Department of Defense.

The program, which brought immediate protests from some groups, was announced following a meeting of officials of the USAF, Navy, Army, CAA, CAB, ACC, ATA and some airline representatives. It was tentatively agreed that all civil aircraft flying within 100 miles of atomic installations or 200 miles of the northeastern coast would be required to file flight plans.

While the program will be expanded to other areas as equipment and personnel become available, at the present time it applies to any inbound flight entering the airspace within 200 miles of the eastern coastal boundary of the U. S. extending northward from Norfolk, Va., and any flights entering the airspace within 100 miles of Oak Ridge, Tenn.; Hanford, Wash., or Los Alamos, N. M.

Some airline officials have expressed dissatisfaction over the arrangements which were made with few airline representatives present and at a time when ATA had not had the opportunity to survey its group to obtain a uniform stand representative of its membership.

One of the first organizations to place objections on the record was the National Association of State Aviation Officials. A. B. McMullen, executive secretary of NASAO, termed the program "unworkable." He indicated that communications facilities are completely inadequate to handle the number of position reports which would result from such a plan. "Either the system will bog down," he said, "or in the alternative, many people will just have to quit flying in the affected areas."

Civil Schools May Get AF Training

The Air Force will soon initiate a test program to explore the desirability of civilian contract school training of USAF pilots and technicians, the Department of Defense announced on January 31. Bids will be invited for civilian contract management of one of the four USAF basic flight schools, and for training a small number of aircraft and engine mechanics in civilian technical schools.

The Air Materiel Command, with headquarters at Wright-Patterson Air Force Base, Ohio, will accept civilian contract proposals for possible use in conducting the flying and technical training. Proposals will be reviewed by the Air Training Command, with headquarters at Scott AFB, Belleville, Illinois, which will forward recommendations to the USAF Chief of Staff for approval.

Information has not yet been released as to which of the four USAF basic flying schools will be affected, and the Air Force states that this information will not be available until it has been determined which, if any, of the contract bids will be accepted. The four basic USAF flying schools, all in Texas, are: Randolph AFB, San Antonio; Connally AFB, Waco; Goodfellow AFB, San Angelo; and Perrin AFB, Sherman.

Should a contract bid be accepted, the experimental training program will test the findings of the Stanford Report, which was made for the USAF by the Stanford (California) Research Institute. While the findings have not been released, it is believed that the report recommended civilian contract training of military personnel on the grounds of economy and effectiveness.

That a vast civilian potential for aviation training exists was established by the recent survey made by Wayne Weishaar, secretary, Aeronautical Training Society. The survey did not cover all ATS members or capacity for expansion, but showed that 31 member flight schools in 20 states now have the equipment and the facilities to start 9,082 military cadets in their flying training. (Details in AMERICAN AVIATION, February 1, 1950.)

New Ram-Jets Coming for Supersonic Power

Although the piston-type aircraft engine has yet to reach its ultimate stage of development and the jet engine is still in its youth as far as power output and fuel efficiency are concerned, the military services are now placing considerable emphasis on a possible successor to both type of propulsion—the ram-jet engine.

This was pointed up within the last few weeks as two organizations, Wright Aeronautical Corp. and Princeton University, were permitted to unveil some of their work in the ram-jet field.

Although the ram-jet engine is not a recent development, there has not been too much said about it yet. The simplest of all power plants, the ram-jet is nothing more than a "flying stovepipe," open at both ends, with a fire inside the pipe and controls to regulate the flow of fuel into the fire. The forward motion of the stovepipe forces air into it, which is burned in the fire, expanded and forced out the rear as propelling thrust.

Obviously, the more air forced in the front of the pipe, the greater the thrust; for this reason, the ram-jet is most efficient at high speeds, peak efficiency being reached at about Mach 3 (three times the speed of sound) or about 2,000 miles per hour. For the same reason the ram-jet can not take off from a standing start, since there is no air being forced into the front of the pipe. The ram-jet, therefore, needs some sort of auxiliary propulsion to get it up to a speed at which it can operate by itself.

Five Years Off?

Until now it has generally been thought that the only application of the ram-jet would be in guided missiles, but there is now a school of thought which feels that it can also be applied to piloted aircraft. Jack Charshafian, manager of Wright Aeronautical's ram-jet division, for instance, thinks that the ram-jet will reach a state of development within five years where it can be used in airplanes.

It would still need an auxiliary power plant; the plane would probably take off and accelerate to a speed of about Mach 1 (the speed of sound) under ordinary turbo-jet power. Then the ram-jet would be cut in for acceleration to the Mach 3 range.

Present thinking, as regards the speed of piloted jet aircraft, goes only up to Mach 1 or slightly faster, but the day will come when we will start thinking in the Mach 3 range, according to Charshafian. When that day comes, we will see wide application of the ram-jet, for at Mach 3 it is the most efficient power plant known.

A 20-inch diameter ram-jet would turn out 42,000 pounds thrust at Mach 3, or roughly seven times the power our present operational turbo-jet generate in their own speed range. Yet the ram-jet would burn only .604 pounds of fuel per hour for each pound of thrust it developed, considerably less than the most efficient turbo-jet.

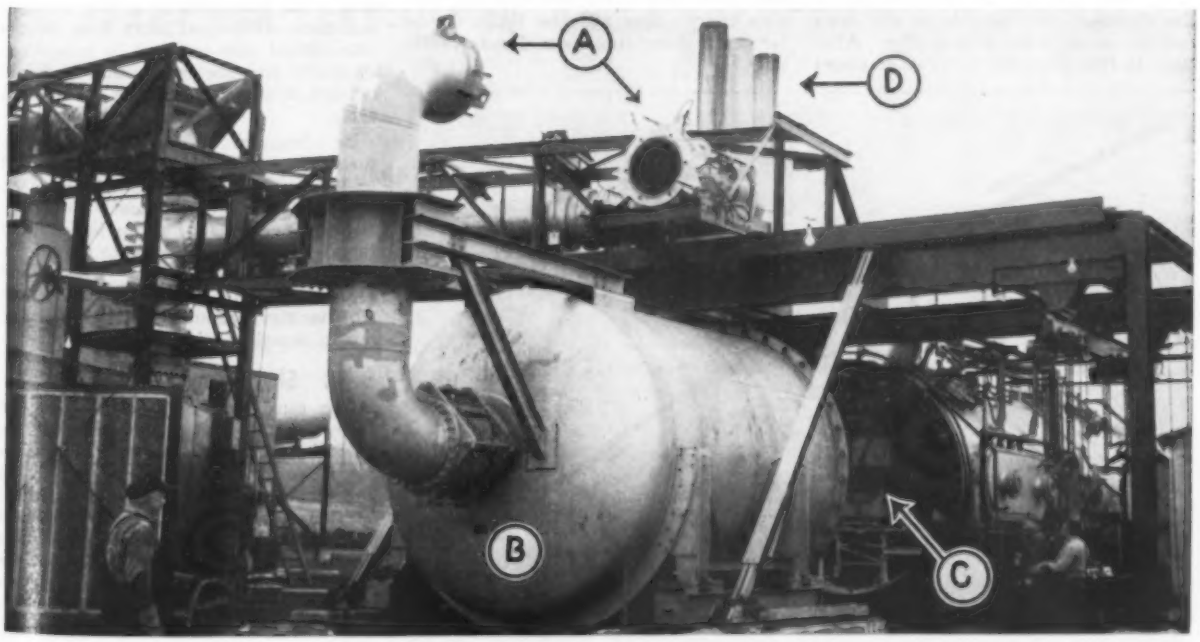
Wright Aeronautical is now testing such a 20-inch ram-jet, although company officials are not permitted to say so, and a "stovepipe" with a diameter more than twice as great is in an early development stage.

The company was, however, permitted to unveil its new supersonic ram-jet test laboratory, which can test ram-jets up to 20 inches in diameter and which is being modified to handle 40-inch stovepipes.

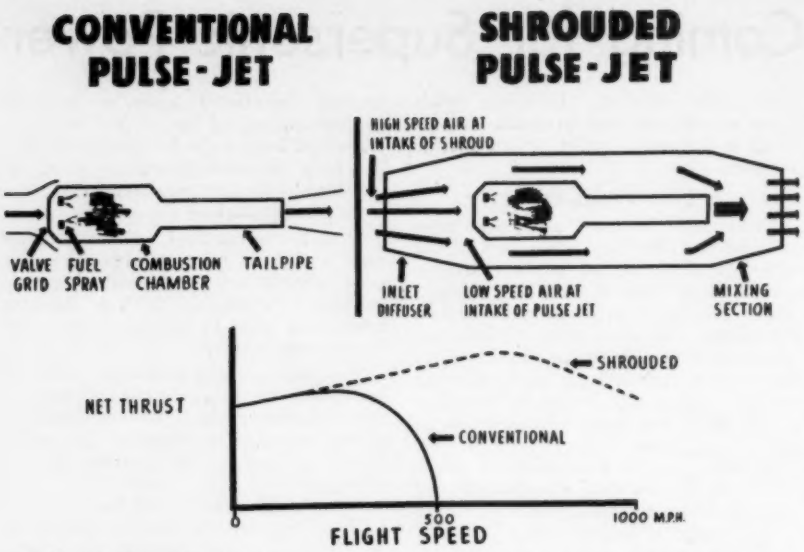
The Wright chamber, 12 feet wide by 93 feet long, can simulate air speeds up to 2,600 miles per hour and can duplicate altitude conditions up to 80,000 feet. The chamber is located next to Wright's Gas Turbine Development Laboratory, which supplies the power.

A series of electric motors, turning up 15,000 horsepower, drive compressors which deliver air to the test chamber at the rate of 140 tons per hour. The air first goes into a "surge chamber," where the turbulence is removed, then forced into the mouth of the ram-jet to be tested, located in the main test chamber.

The entire chamber is jacketed by a



Ram-Jet Test Lab—Wright Aeronautical Corp's. ram-jet test laboratory at Wood-Ridge, N. J. Air is pumped from the adjacent Gas Turbine Development Laboratory through pipe (A) at the rate of 140 tons per hour into the surge chamber (B), which reduces air turbulance, then into the 20-inch test pipe (C) behind which the ram-jet engine to be tested is mounted. The exhaust stream then passes through an ejector manifold where it is cooled, and finally out through the three exhaust silencers (D), which reduce the noise in the same fashion as an automobile muffler. The surge chamber, mounted on rollers, moves in to connect with the main chamber by means of an electric capstan. A control room is located at the right of the chamber.



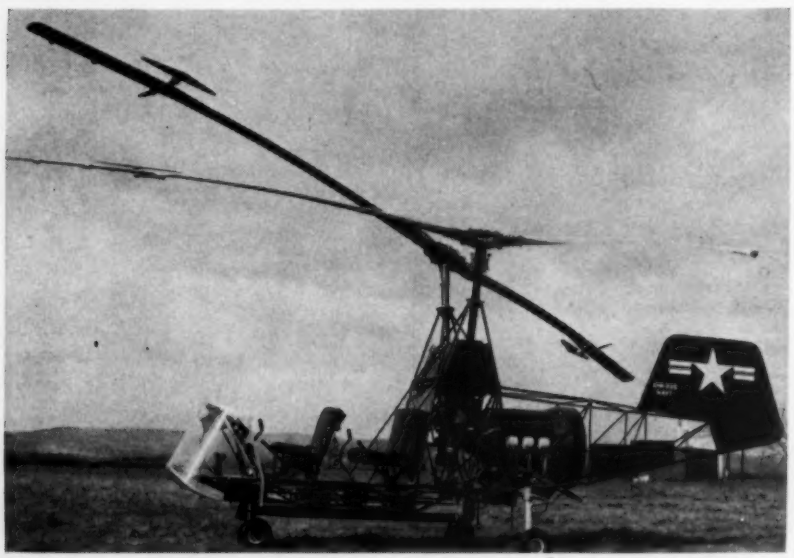
Refined Ram-Jet— This is a diagram of one of the refinements of the ram-jet principle being developed under sponsorship of Project Squid, joint Navy-Air Force basic research program. In the ordinary pulse-jet, air enters the intake too fast for efficient operation. So the shroud, or stovepipe, has been added to serve as a diffuser, slowing down the air before it reaches the pulse jet intake. Bottom shows relative speed ranges of the ordinary pulse-jet and the shrouded pulse-jet.

layer of circulating water for cooling purposes; temperatures in the chamber sometimes reach 4,000 degrees Fahrenheit.

Altitude Simulated

To muffle the exhaust noise, which is terrific, three silencers, each 45 feet high, were built at the exhaust end of the chamber; they operate in the same manner as an automobile muffler. Altitude is simulated by a series of steam jets pointed into the exhaust system to aid or retard the escape of exhaust gas. By varying the incoming air pressure and the outlet pressure, it is possible to "starve" or "overfeed" the engine, thereby creating the effect of altitude.

The test chamber was built by the Air Force at a cost of only $600,000, the low cost being due to the fact that the turbine compressors and the boiler house for steam generating were already available.



Navy Buys K-225— This is Kaman Aircraft Corp.'s first military helicopter, the K-225, an "of-the-shelf" stock model of Kaman's commercial craft. The Navy bought three of the three-place 'copters, two for Navy evaluation and one for the Coast Guard. Total cost was surprisingly low—$32,000 per plane, plus $15,000 in spare parts. The three craft are fitted with a full complement of flight and engine instruments for the rear seat, which will probably be an instructor's position.

Princeton is one of seven universities conducting research on ram-jets and other propulsion units under the sponsorship of Project Squid. Squid is a joint Navy-Air Force program of basic research in the field of jet propulsion. Project headquarters is located at Princeton, and Johns Hopkins, Cornell, Purdue, Delaware, New York University and Brooklyn Polytechnic Institute also participate.

At the First Annual Technical Symposium of the Aviation Writers Association, held at Princeton January 27-28, Squid scientists demonstrated some of their work in the ram-jet field.

Three new types of power plants, all refinements of the ram-jet principle, were described: (1) the ram-rocket, (2) the intermittent ram-jet and (3) the shrouded pulse-jet, the first two undergoing research at Princeton while the latter is being worked on at Cornell.

The ram-rocket consists of a ram-jet with a rocket motor inside it. The air enters the ram intake, flows around the rocket and mixes with the rocket exhaust before being forced out the rear of the tube; thus the rocket serves as the "fire" for the ram-jet. This system provides extra thrust, and at the same time lowers the specific fuel consumption of the rocket by utilizing some of the additional energy normally wasted because of the rocket's low efficiency. At the same time, it permits efficient operation in the lower speed range (Mach 1 to Mach 2) where the ram-jet itself is normally inefficient.

The intermittent ram-jet is outwardly similar to the continuous-flow ram-jet, the main difference being that, in the intermittent ram-jet, fuel is introduced cyclically and the combustion is intermittent, with a pressure rise during each cycle.

Its advantage lies in the cyclic pressure rise: since the power output and fuel economy of jet engines depend on the operating pressure level, theoretically the performance of an intermittent ram-jet should be superior to that of the continuous-flow ram-jet. The Squid research is being carried out to find out whether the theoretical advantage proves out in actual operation.

Shrouded Pulse-Jet

The third refinement of the ram-jet being investigated by Squid is the shrouded pulse-jet. An ordinary pulse-jet is one in which the air is gulped into the intake intermittently, causing intermittent combustion like the intermittent ram-jet, although the fuel injection is continuous. Its disadvantage is that the air enters the intake at too great a velocity, causing a drag around the intake, thus reduced propulsive efficiency.

The shrouded pulse-jet consists of an ordinary pulse-jet with a shroud, or stovepipe, placed around it (see diagram). The shroud serves as a diffuser to slow the air down, permitting better pulse-jet operation. In addition, the excess air flowing around the pulse-jet

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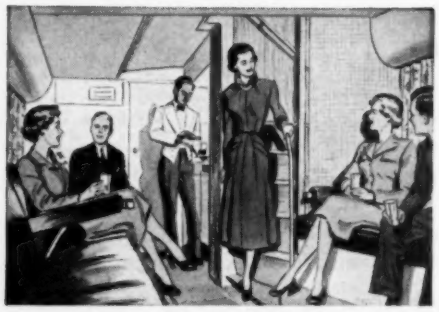

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mixes with the pulse-jet's exhaust, thereby creating additional thrust.

The ordinary pulse-jet, which was the engine used to power the German V-1 missiles in the last war, was efficient only up to about 400 miles per hour; by shrouding it, Squid scientists hope to develop a power plant which will be able to operate in the Mach 1 to 2 range.

At the symposium, Princeton also unveiled its new wind tunnel, which can simulate airspeeds from 1,000 to 3,500 miles per hour at altitudes from sea level to 100,000 feet. The tunnel is of the "blow-down" variety, that is, instead of a continuous air flow generated by "fans," air is compressed and stored in "flasks," then let into the test chamber by a valve system.

Princeton scientists claim that it is unique in that it most nearly duplicates the exact pressure conditions which would be encountered in actual airplane operation. The test chamber is only four by eight inches, too small to test airplane models, so only wing and fuselage shapes are tested. Overall length of the tunnel is 45 feet.

One really unique point about the tunnel is its cost; the entire tunnel represents an investment of only $500,000. The "blow-down" system accounts for some of the saving, since the expensive power supply is eliminated. In addition, the tunnel was built from war surplus material; the settling chamber, for instance, was once the cylinder of a 16-inch gun, and the side walls were originally armor plate intended for a battleship.

Leading British Aviation Writer Joins AMERICAN AVIATION

Richard G. Worcester, the leading technical aviation writer of Great Britain, is joining the editorial staff of AMERICAN AVIATION magazine and *American Aviation Daily* on February 15.

Worcester, who plans to make his permanent home in the United States, has been in charge of all technical material in the well-known British weekly journal, *The Aeroplane*, since 1946. In his new position he will specialize in engineering and design developments of U. S. aircraft for AA publications.

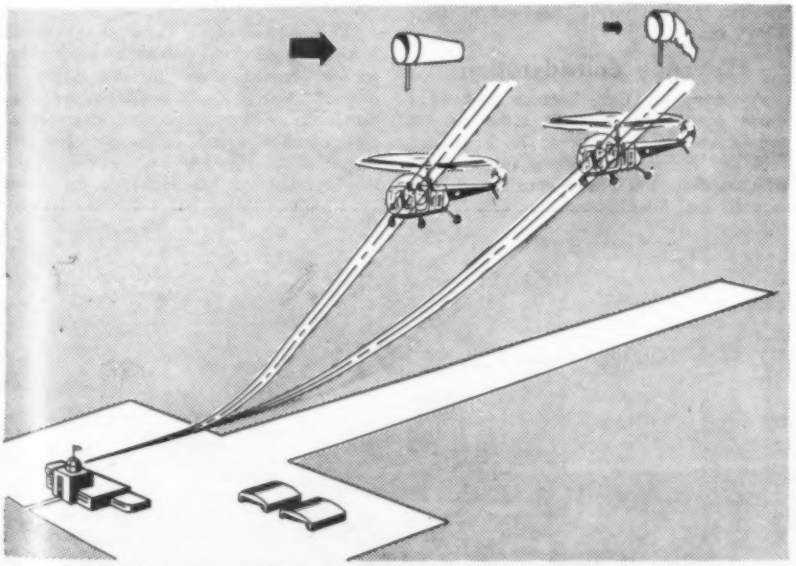
The British journalist, rated as a top pilot and qualified ground engineer, recently completed a series of 40 flying assignments to evaluate British and European aircraft types for *The Aeroplane*.

He has flown some of Britain's latest jet airplanes and has logged 2,000 hours as first pilot in 120 different types of British and American aircraft, both civil and military. His postwar first pilot experience includes the Vickers Viscount, Airspeed Ambassador and Mamba Marathon transports, Solent flying boat, experimental Nene-Viking, Vampire, Meteor 7, prop-jet Trent-Meteor, Brigand bomber, Navy Sea Fury and Firebrand, and Martin-Baker MB-5 experimental fighter.

During the past war Worcester was technical officer at the Aeroplane and Armament Experimental Establishment, England, and later served as a Lieutenant transport pilot in the Royal Navy. At the end of the war he was in Air Warfare Division of the Naval Staff at Admiralty.

Other experience includes that of First Officer pilot with British Overseas Airways Corporation and with the wartime Air Transport Auxiliary. He served an industrial apprenticeship with Airspeed, Ltd., and was technical officer at Armstrong Whitworth Aircraft for the Ministry of Aircraft Production.

He has been a qualified commercial ground engineer since 1934.



Glide Path for Helicopter Let-Down

This is the radio glide path proposed by two Bell Aircraft Corp. engineers for helicopter instrument let-down, The engineers, Joseph A. Cannon and Owen Q. Niehaus, advanced their idea in a paper on "Practical Instrument Flying in the Helicopter," delivered before the Rotary Wing Aircraft session of the 18th Annual Meeting of the Institute of the Aeronautical Sciences in New York.

Contrary to popular belief, the Bell engineers point out, there seems to be little advantage in the straight vertical helicopter let-down. Power requirements are high and the danger of blade stall is ever present. Also, the fixed-position vertical let-down over a marker offers severe problems from the electronic standpoint in presenting sufficient information to the pilot; the problem is not in locating the marker, but in staying over it during descent. Picture, for instance, a helicopter letting down vertically, with 0 mph forward speed in a 30 mph wind.

The glide path pictured above is one solution, the Bell engineers say. It would require the development of a radio device into which the tower operator could set the wind direction and velocity. The helicopter would then have only to follow the glide path at a fixed forward airspeed. In high winds the tower operator would set the glide path at a steep angle, about 60 degrees, as in the left of the diagram. In calm air a lower angle glide path would be used.

In their lecture, the Bell engineers stated that "Class One" helicopter instrument flight, or that having a minimum flight airspeed of 40 mph, is not only possible but "is a reality and is practical." Class Two instrument flight, that in the 0-40 mph speed range, still poses problems.

THE AIRLAW LIBRARY

Airports, Airlines Still Seek Equitable Charge Formula

By KEITH SAUNDERS

Proposed increases in airport use charges, which have been the subject of recurrent controversy in recent years, are receiving considerable attention by all groups involved and prospects are improving for developing an equitable basic charge formula in the months ahead.

Airport groups faced with high operating costs are avowedly determined to make users pay more for services, while the customers, principally the airlines, are faced with the need to hold down the expense line wherever possible.

The Civil Aeronautics Administration, which has a stake in hundreds of airports because of Federal grants-in-aid, will seek to play the role of middleman, striving to see that the airports become as nearly self-supporting as possible while at the same time seeking to curb or eliminate wasteful and inefficient airport management practices which bring about the necessity for higher use charges.

The contention of those seeking higher use charges is that increased revenues are a necessity to their continued growth and existence.

One of their prinicipal means of boosting revenues is through abandonment of the system of basing landing fees on the number of schedules operated and substituting a system of landing fees based on take-off weight.

This subject stirred up such a heated discussion at the late January meeting of CAA's Airports Advisory Committee in Los Angeles that it was given top priority on the agenda for the next meeting of the committee in May. At that time the Air Transport Association is slated to submit what it considers to be an equitable basic formula of airport charges.

Airline Viewpoints

Leslie P. Arnold, vice president of Eastern Air Lines, and George H. Clay, secretary of Trans World Airline, appeared at the L. A. meeting to discuss use charges with the airport committee members. Arnold urged the group to give consideration to airport economics from the standpoint of users as well as to operational and technical problems.

Citing wide variations in Eastern's landing charge payments at several airports having comparable number of landings, he said imprudent management made some airports charge airlines more than they are charged at well managed airports.

For example, the EAL official said, an airport that maintains a fire department costing $50,000 a year when it could have ample protection with an expenditure of $25,000 should not expect the airlines to pay for the excess equipment and personnel it is maintaining.

Arnold strongly opposed the use of take-off weight as the base for airport use charges and suggested that landing weight would be a better basis. He said that in domestic airline operations, the actual take-off weight would not vary more than 1% to 2% from specified landing weight, whereas if charges were based on take-off weights, carriers would frequently be charged for weight they didn't use.

Revenue Consideration

Pointing out that Eastern last year made money in only 12 cities on its routes and lost money at 70, he urged that the committee seek a formula for charges that would give consideration to the airline's revenues in a particular city.

Clay told the committee he favored schedule landing fees as the best method of assessing airport charges because of the simplicity in accounting. Any other formula, he said, would add bookkeeping complications and increase costs. He cited a proposed airport tariff which, before it was readjusted, would have cost TWA 40 new employes to do the accounting.

That CAA is well aware of the problem was made clear when Phillips Moore, director of the Office of Airports, spoke on the objectives and goals of the agency's airports management consulting service.

Moore said CAA feels that the proper maintenance and operation of an airport is equally as important as the construction of the facility itself. And CAA, he said, has set up a small staff of qualified specialists to advise and consult with airport people to see that airports are properly managed and operated in order that they may someday be wholly on a self-sustaining basis, thereby eliminating the need for any possible Federal aid for their upkeep and operation. He said records available to CAA indicate that more than 200 airports are now operating at a profit, but many hundreds of others are not.

Heads Consulting Service

To head this consulting service, CAA in late January appointed Dr. James E. Mooney, former director of the Bureau of Aeronautics, Pinellas County, St. Petersburg, Fla., and a member of the Airports Advisory Committee until his appointment to the CAA post.

"The objective of our management consulting service," Moore told the committee, "is to place in the hands of owners of airports all available information both as to methods and formulae on rates and charges in order that the owner of the facility may attract wider employment of his facilities on terms

Side Intakes—This is the latest Air Force fighter to take to the air, The North American YF-93A. The YF-93A is a modified version of North American's F-86 Sabre, with the air intakes in the sides of the fuselage instead of the nose. It is not to be confused with the YF-86D, another Sabre version with an externally similar appearance. The YF-93A is one of the most powerful fighters in the world; its Pratt & Whitney J-48 jet engine develops 6,250 pounds static thrust, and, in addition, it is equipped with an afterburner which boosts the power output to about 8,000 pounds.

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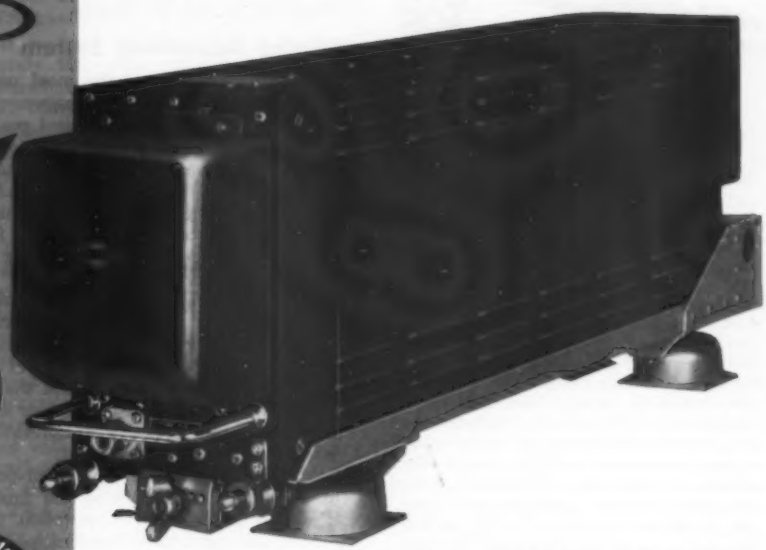

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that are both reasonable to the user and revenue-producing to himself.

"In this connection, we are soliciting financial statements from owners of airports in order to evaluate current trends in this highly important field. In addition, we expect to obtain from this information the best practices on rates and charges and to disseminate the information to our regional offices, which in turn will be in a position to furnish the information to airport owners."

Lacks Accounting System

CAA feels that one of the most useful tools in helping airport managements with their financial operations and problems is a good business accounting system, which is something most of them lack at present. To this end, CAA's Office of Airports has worked up a suggested system of business accounting for airports and is currently circulating it for comments and suggestions.

This was necessary because the regular fiscal records of most public agencies do not reflect the type of information that is needed by the management of an airport, and do not generally lend themselves to the ready development or extraction of the type of information needed by airport management.

And without reliable and well-presented information regarding the financial aspects of an airport's operation, the airport's management is handicapped in the development of additional revenues and in keeping operating expenses within economically sound limits.

While recognizing that procedures for developing and extracting needed information from airport records must be adapted somewhat to the individual situation in each given case, CAA feels nevertheless that some suggested forms for setting up the journals and ledgers can be of material assistance to those who actually maintain the business accounting records for airports and prepare the financial statements for the information of management. So it has included in its suggested accounting system sample forms for this purpose.

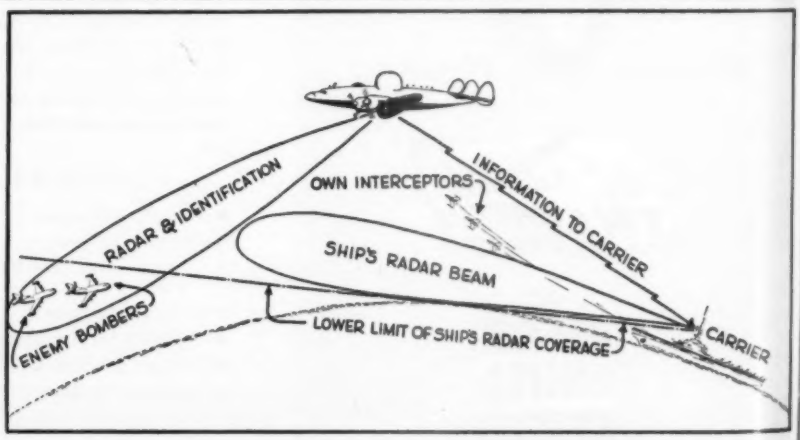
Flexible Design

Because many cities and counties do not have large and specialized staffs of personnel and other facilities available for the desired type of record-keeping, CAA has attempted to design its suggested system so that it may be contracted to meet the needs of the smallest airport, and to design the various forms and records so they may be maintained by simple manual bookkeeping.

It is CAA's feeling that when airports keep proper financial records, these records will show up good and bad practices, strong and weak points, in the individual airport's operation. This information, in turn, not only will enable each airport to improve its own business methods, but the cumulative information from a large number of airports could be used by all others.

CAA does not specifically object to higher use charges in some instances at airports in which it has a stake, but it does want to make sure that such charges are justifiable from sound business practices and do not stem from inefficient airport management.

As far as the airports are concerned, at least the larger ones, many are going ahead with plans to boost landing fees and other user charges. The City of Memphis recently adopted a 9c per 1,000 pounds take-off charge for airline users of its airport, and several other cities are working on upward revisions of their airport charges.



Early Warning—This diagram illustrates the operational employment of one of the Navy's newest aircraft, the Lockheed PO-1W early warning aircraft, which is a Constellation equipped with the latest radar devices (the bulging radomes on the top and bottom of the fuselage house antennae). The range of ship-borne radar is limited by the curvature of the earth; the diagram shows how it would fail to detect low-flying enemy bombers. The PO-1W, flying at high altitude, increases the radar range many times because it is not hampered by the earth's curvature. Detecting a plane or planes not properly identified, the PO-1W flashes a warning to the carrier, which can then get its interceptor aircraft airborne in time to ward off an attack.

Transcontinental Air Coach Service Needs Sales Push

By Fred S. Hunter

Among traffic men in Los Angeles, there are almost as many different individual opinions regarding what's what in the current transcontinental air coach situation as there are guesses on the outcome of the next race at Santa Anita.

Initial phase of the $110 counter-attack launched against the non-skeds by American Airlines and TWA, however, has served to confirm one fact: that air coach service doesn't sell itself purely by virtue of its reduced price. It must be merchandised, too.

The slow-roll aspects of the start of the venture of AAL and TWA into the coast-to-coast cut-rate market is not in the least discouraging to traffic executives of the two companies.

Said F. M. Burg, Los Angeles sales manager for AAL:

"We'll sell it. Dependability and reliability are on our side. You know how long the non-scheduled carriers have been established in the business and how many lines of advertising they have used over the years. Well, we just have a tremendous job to do in educating a very sizeable portion of the population, and we are going to do that job."

Said F. S. Donant, district sales manager for TWA:

"The new cross-country sky coach service, reputable and regularly scheduled, has started off slowly, but is rapidly gaining momentum. It appears to be following the pattern of TWA's year-old Los Angeles-Kansas City coach service—that is, gathering popularity slowly at first and then rising rapidly toward becoming a best selling service."

Fare Differences

Followers of the fortunes of Western Air Lines of California, which practically overnight surged into a commanding position in the $9.95 intrastate field in California, have no doubt that the prophecies of Burg and Donant will be realized this spring, even though they may be of the school that thinks AAL and TWA may have erred by not meeting the non-skeds on their own $99 terms. There also are a couple of significant trend signs even though on both AAL and TWA load factors in the first few weeks of operation ran disappointingly below the load factors of the first class trips on the same lines.

Over a period of approximately four weeks AAL and TWA combined carried a total of 1,222 passengers out of Los Angeles. During this period six flights were cancelled out because of weather or other causes. In the same period, the large irregular carriers carried 2,409 passengers out of Lockheed Air Terminal at Burbank.

Although the non-skeds held their position by carrying twice as many passengers eastbound from Los Angeles as the two certificated carriers in this period, their volume had dropped from 2,780 passengers the month before.

It is true this decrease of approximately 10% may have been mitigated somewhat by the fact that Air America, Inc., acknowledged to have been a top-notcher in developing traffic among the non-skeds, had quit flying during the period.

More Than Price

The two certificated carriers have more than the price differential to overcome in converting typical air coach trade away from the non-skeds. The non-skeds, for example, make full use of that handy instrument, the telephone, and also make it easy for prospective customers to make reservations and buy tickets, which are delivered by messenger. Even passengers with a sense of the reliability of a certificated carrier are affected by the fact that to make a reservation on AAL or TWA it is necessary to go to the ticket office and lay out the cash for the ticket. The 25% penalty on refunds adds to this sales handicap. Reservations agents, who get the phone calls and have to explain, say these restrictions of the air coach tariff delay sales progress more than the difference between $110 and $99.

However, promotion-wise at least, this price differential is spreading. Practically all of the advertising by ticket agencies for the irregular carriers in Los Angeles has been switched from the $99 to the $88 fare. Most sales, however, are still at $99.

One ticket agent explained it: "We feature $88, but we sell $99."

Advertising $88 gives a ticket agency good leverage in shooting at the dollar-conscious passenger even though what eventually is hung up for sale is a ticket costing $11 more ($12.65 more in all counting tax). Counting the tax, the saving on the $88 ticket would be $25.30 over an AAL or TWA coach ticket, $101.20 as compared to $126.50.

Savings Emphasized

Roger Combs, an old hand at air transportation advertising who once was an account executive handling the Air Transport Association's joint advertising and is now vice president of a Los Angeles advertising agency, seized the opportunity to make an advertising headline out of the fact that the round-trip saving (10% discount on return portion) comes to a total of $60.72 when you figure in the taxes too.

Competition works fast in the non-sked game and now that AAL and TWA are accentuating it, some of the non-skeds are coming up with service features to bolster their merchandising programs. Already some flights are carrying two stewardesses instead of only one and are serving food aloft. They haven't gotten around to the steak dinners yet, but as one operator grumbled: "In this daffy business, who knows?"

A moot question is whether AAL and TWA might have made their competition with the non-skeds more effective by scheduling their flights from Lockheed Air Terminal, base of the non-skeds, at Burbank, rather than the Los Angeles Airport. Those favoring Lockheed as a vantage point for coach service point out that AAL and TWA could have challenged the non-skeds on their home ground. Since Los Angeles generates 25-30% more transcontinental non-sked traffic than New York, terminal location on the west end of the line is held to be important.

In this latter connection, it is pointed out also that the coach-type passenger's flight takes on the proportions of an event and brings out bon-voyaging relatives and neighbors, who can't spend $1.25 per head on coach transportation to the airport. The Lockheed terminal has better public transportation, including express bus service both from downtown Los Angeles and Hollywood.

As for the end result of the coach controversy, you might take your pick of three different viewpoints as expressed by three different air traffic men:

No. 1—The enforcement section of the CAB will settle this one by making it too tough for the non-skeds to do business.

No. 2—When American gets its DC-6 equipment in coach service the show will be all over.

No. 3—More people than ever are counting their dollars this year and a saving of even $11 counts.

Coach Passenger Survey

Standard first-class air services would have been utilized by 43.1% of the non-scheduled airline passengers surveyed recently by the Census Bureau, if another means of transportation had to be used. The number far exceeded the 21.4% that would have chosen rail pullman which ranked second in the poll. On a classified basis the greatest preference for first-class air was shown by persons traveling on business who had flown previously by air. 53.5% of this group would have paid the 6.1c per-mile fare of the scheduled lines if coach services were not available.

In favor of air coach service, however, were 470 of the 1,917 passengers polled who indicated they would not travel by any other means if the low-fare coach flights were not operated. The survey was conducted October 17-30, 1949.

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Aviation Calendar

Feb. 16—Aviation Law Clinic, sponsored by the Chicago Bar Ass'n and Illinois State Bar Ass'n, 29 S. LaSalle St., Chicago, Illinois.

Feb. 18-26—1950 New York Airplane Show in conjunction with National Sportsmen's and Vacation Show, Grand Central Palace, New York, N. Y.

Feb. 23-24—Aviation Education Conference, Hotel Traymore, Atlantic City, N. J.

March 1-2—Louisiana Aviation Conference, Washington-Youree Hotel, Shreveport.

March 6-8—CAA Fourth Region sixth annual Non-scheduled Operators' Meeting, Hotel Texas, Ft. Worth, Texas.

March 6-8—Second annual National Agricultural Aviation Conference, Hotel Texas, Ft. Worth, Texas.

March 9—Airport Division, American Road Builders' Association, annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio.

March 24—Institute of the Aeronautical Sciences fifth annual Flight Propulsion Meeting, Carter Hotel, Cleveland, Ohio.

March 30-31—Sixth annual Helicopter Forum (sponsored by American Helicopter Society and Institute of the Aeronautical Sciences), Ben Franklin Hotel, Philadelphia, Pa.

April 4-6—ATA annual Engineering and Maintenance Conference, Hotel Continental, Kansas City, Missouri.

April 16-20—American Association of Airport Executives annual meeting, Neil House Hotel, Columbus, Ohio.

April 17-19—SAE aeronautic meeting and aircraft engineering display, Hotel Statler, New York City.

April 24-26—Airport Operators Council third annual meeting, Hotel Carter, Cleveland, Ohio.

June 4-9—SAE summer meeting, French Lick Springs Hotel, French Lick, Indiana.

June 10-13—National Aeronautic Association 28th annual convention, Hotel Statler, St. Louis, Missouri.

International

March 21—ICAO African - Indian Ocean-Middle East Fixed Services meeting, Paris.

April 11—ICAO Caribbean regional meeting, Havana.

May 30—ICAO Fourth Assembly, Montreal.

CAB CALENDAR

Feb. 20—(Docket 3966 et al.) Hearing in West Coast Airlines Certificate Renewal Case. Tentative. Place and hour to be announced later. Postponed from February 13.

Feb. 20—(Docket 3218) Hearing on application of Aerovias Guest, S. A., for foreign air carrier permit (Miami-Madrid). Tentative. Examiner Walter W. Bryan.

Feb. 20—(Docket 2724) Hearing in Colonial Airlines, Inc.—Final Mail Rate Case. Tentative. Examiner R. Vernon Radcliffe. Postponed from February 6.

Feb. 27—(Docket 2755) Hearing in Pan American-Grace Airways, Inc. Mail Rate Case. Tentative. Examiner Barron Fredricks.

Mar. 1—(Docket 3589 et al.) Oral argument before the Board in North Atlantic Route Transfer Case (PAA-AOA Merger). 10 a. m., Room 5042, Commerce Building, Washington.

Mar. 6—(Docket 3661) Hearing Twin Cities-Washington - Detroit - Washington Through Service Investigation. Tentative. Examiner William F. Cusick.

Mar. 6—(Docket 3500 et al.) Hearing in National Airlines, Inc. Dismemberment Case. 10 a. m., Conference Room B, Departmental Auditorium, Washington Examiners Francis W. Brown and James S. Keith. Postponed from January 25.

Airline Cargo Consolidation Charges to Get CAB Airing

By William V. Henzey

The Civil Aeronautics Board will hold public hearings in the near future on the alleged existence of unlawful activities in the air cargo field. The charges, based upon informal investigations, complaints and general information, involve possible discrimination, unfair competitive practices, violations of tariffs, and indirect air carrier activities without appropriate license.

Of particular significance is the fact that various activities involved are those which only an authorized forwarder is certificated to perform. Under so-called assembly and distribution tariff rules, several of the airlines may, upon prior instructions, consolidate shipments from one consignor for a charge and over a designated period of time.

To consolidate shipments from more than one consignor, however, either directly or by device, to provide lower bulk rates, is considered a violation of the tariff rules and an inroad on the functions of authorized forwarders.

Charged with one or more of the violations are American Airlines and Northwest Airlines, two cartage operators, and a consolidator of freight shipments acting as a forwarder without authorization.

Flower Shipments

The charge against American grew out of that carrier's activities in connection with eastbound shipments of flowers from the San Francisco Bay Area. In the latter part of 1948, American is alleged to have tried in vain to enter an arrangement with Airborne Flower and Freight Traffic, Inc., an authorized air freight forwarder, under which AA proposed to guarantee sufficient space for the movement of Airborne's freight in return for the latter's commitment to utilize the services of no other carrier.

Subsequently, personnel of the line, CAB said, encouraged and aided florists in the area to form a non-profit corporation, the Bay Area Shippers and Growers, Inc., for the purpose of consolidating their flower shipments for movement to eastern markets at bulk rates which, on a unit basis, are considerably lower than the rates which would have applied to individual and smaller shipments.

An allocation system was arranged under which the majority of AA's available cargo space for flower shipments was reserved for the new corporation and it is claimed, highly perishable flower shipments tendered by Airborne were on several occasions accepted only subject to delay. This brought a charge of possible unlawful discrimination against shippers which American must answer at the forthcoming hearings.

The Bay Area concern purportedly signed a contract with a Redwood City, Calif., trucker named Clyde E. Reynolds who was designated as agent to consolidate shipments under master airbills for transportation to eastern markets.

Bulk Rate on Waybill

The shipments were turned over to Reynolds by individual members of the firm, together with copies of shipping manifests listing the original consignors and ultimate consignees. Reynolds entered upon the manifests a prorated air freight charge based upon the bulk rates of American and prepared master airbills listing himself as consignor and various truckers at delivery points as consignees.

American is alleged to have accepted the shipments, CAB said, together with copies of the shipping manifests and the master airbills and exacted for the transportation its bulk rates rather than the higher individual shipment rates which, under effective tariffs, would have been applicable.

In addition to similarly accepting consolidated shipments from another concern, American Shippers, Inc., AA is also charged with aiding and encouraging the organization and establishment of other shipping associations, including associations of retail merchants doing business in the San Francisco and Oakland areas, and transporting their consolidated shipments at the lower bulk rates.

Summed up, American is charged with (a) exacting improper rates, (b) unlawful discrimination against certain shippers, (c) providing a distribution service otherwise than in conformity with its tariff rules, and (d) unfair methods of competition.

Similar Case

Though not as broad, the case involving Northwest Airlines is of a somewhat similar nature. Representatives of the company and two trucking concerns, Fly Freight, Inc., of New York City, and Sterling Freightways, of Minneapolis, are said to have discussed and arranged for an alleged unlawful consolidation service for a period of weeks in advance of its inauguration.

The arrangements called for Fly Freight, a pick-up and delivery carrier for NWA under contract with Air Cargo, Inc., to consolidate shipments from numerous consignors in New York City and transport them, as one shipment, via NWA to Sterling in Minneapolis, at the lower bulk rates. At that point, the distribution service was handled by Sterling. Solicitation of business on this basis is one of the charges against NWA and the two trucking lines.

Of a somewhat different nature is a case against American Shippers, Inc., of Los Angeles, which CAB claims has operated as an air freight forwarder though not authorized to do so. Under an order issued some fourteen months ago, companies desiring to engage in air freight forwarder activities must secure a letter of registration.

Though having applied for such a letter, American Shippers never fulfilled the necessary requirements and its conduct of business in the capacity of a forwarder is a violation of the Act, CAB said. An investigation has been ordered by the Board and the case will be heard in early spring.

Big Shipment—Approximately 200,000 pounds of furniture and other equipment for the new Caribe-Hilton Hotel in San Juan, Puerto Rico, were shipped in by air, constituting one of the largest commercial shipments yet handled by an airline. Loading of the first plane load at Miami is shown. Included were 600 bed frames, 304 dressers, 352 vanity tables, 3,000 chairs and sofas and 335 lamps.

Between the Lines:

Ground View of Air Power

By James J. Haggerty, Jr.

AIR VETERANS of the last war will no doubt be interested to learn that they spent their tour of duty "being mothered to death, stuffed with sugar-paps and free beer, and filled with a lot of nonsense about what (heroes they were)". At least this is the opinion of a prominent infantryman, Marshall Andrews, who offers this intelligence in a new book provocatively entitled *Disaster Through Air Power.*

Having been somewhat involved in the Italian phase of the air war, we are slightly puzzled to read Mr. Andrews' opinion. We distinctly remember paying cash for our beer (12c a can, we think, three cans a week unless you could buy or beg someone's ration), and although there was an occasional free cup of Red Cross coffee, we don't recall having run across a single sugar-pap throughout the entire war. And as for the hero part, we know of nothing better calculated to dispel delusions of heroism than to have someone thrust a shovel in your hand and tell you to dig a slit trench.

Mr. Andrews' opinion, shared by many a ground-pounder, is apparently that the airman's war-life was just one gay, mad whirl. A mud-slogger's conception would picture a be-ribboned, nattily dressed airman, pockets bulging with flight pay, sprawling blonde-on-knee in a bistro, gaily waving his schnapps glass in time with the music, pausing in his revels only long enough to dash to the airfield and rip off a quick 20 or 30-minute mission.

We have neither the space nor the inclination to controvert such an impression, nor should it be necessary in a publication read by aviation folk. There are, however, a couple of other points in Mr. Andrews' book which should not go unchallenged.

Supports Naval Aviation

First, though, let's mention the book's strong points. Mr. Andrews takes a good wallop at the theory of intercontinental bombing; the title, *Disaster Through Air Power,* refers chiefly to the fact that the American people are being sold a false bill of goods on this theory. Regular readers of this column (if such there be) are aware that we will not take issue with that point. He also sides with the Navy in its battle to preserve its aviation—no argument there, up to a point.

But there are three major points he makes which require some comment:

a) **the Navy should have been permitted to build its super-carrier**
b) **tactical air power, or ground support, is being neglected**
c) **strategic bombing is ineffectual**

Point A. Mr. Andrews quotes a weekly news magazine as saying that the Navy sought to build B-36-size bombers for its super-carrier. This, he says, is "manifestly utter nonsense." He admits that "the Navy needs no big carriers to handle aircraft capable of delivering the atom bomb" but defends the construction of heavy carriers for mine-laying purposes.

We agree that heavier aircraft being developed today require heavier carrier decks, but we think the deck modification program now under way will answer that requirement. As for the "utter nonsense," we happen to know of two aircraft companies which submitted designs for the bomber to be used on the CVA 53, or supercarrier. True, they were not B-36-size; but they were very large, long-range jet aircraft designed for atomic bomb carrying, and were thereby directly competitive to the B-36. This duplication was simply beyond the economic limits of the defense budget.

'Tactical' Propaganda

Point B. The Air Force, in its concentration on strategic bombing, has competely overlooked its "stepchild," tactical, or ground support air, says Mr. Andrews. The planes the Air Force is now building "in small quantities" probably could not be adapted to the demands of close support in time of war, because they are high-speed jets, designed for high-altitude performance. We would, as a matter of fact, have to use World War II Thunderbolts and Mustangs. To which we reply, "manifestly utter nonsense."

Some time ago, the story that tactical air power was being grossly neglected was "planted" with us, as it was with a number of aviation writers, by interests which would like to see such a story in print. It sounded good, so we spent quite a bit of time investigating it. We checked every Pentagon source we could, officially and unofficially. We talked to top brass concerned with tactical air support, not only Air Force, but Army as well. We polished our investigation with a trip to Operation Combine IV at Eglin Air Force Base, Fla., a tactical air support operation (at which Mr. Andrews was not present), and saw first hand the tactical picture. We concluded that there was no foundation for the charges that tactical air was being neglected, and that the story was a vicious propaganda "plant."

Mr. Andrews states: "The ideal solution would be to develop a jet airplane for operation at low altitudes and with an extremely wide speed range, which could fly slowly enough to operate as a low level bomber, but fast enough to escape antiaircraft fire, or to take care of itself against enemy fighters . . ."

We have news for Mr. Andrews. The Air Force has developed exactly such a plane: the Republic F-84E. We are informed by no less authority than Maj. Gen. Robert M. Lee, commanding general, Tactical Air Command, that the F-84 is ideally suited for the task described by Mr. Andrews. And those "small quantities" being procured? At least 120 F-84E's will be bought out of fiscal 1950 funds, roughly one-tenth of all the USAF planes to be bought in 1950.

Fond of Quotes

Point C. We don't have the space to enumerate all the arguments Mr. Andrews makes against strategic bombing—suffice to say he doesn't think much of its efficacy. He disparages the effects of the bombings of Germany and Japan; he even states that German production increased steadily under concentrated strategic bombardment (he admits that it fell off "steadily" after mid-1944, just about the time the Allied air offensive swung into high gear).

Mr. Andrews is very fond of quotes. In his 143-page book, he makes 82 separate references, quoting everyone from "Hap" Arnold to Sir Walter Raleigh (honest), including yours truly. One of his favorite sources is the

(Continued on Next Page)

AIR POWER

(*Continued from page* 24)

U. S. Strategic Bombing Survey (seven times), one of the most mis-quoted, quoted out of context, misinterpreted publications ever printed. You can find a quote in it to fit any point you want to make. Listen to what Franklin D'Olier, chairman of the Survey, had to say on that point (he is not referring to *Disaster Through Air Power* here):

"I have observed with some apprehension considerable misreading and misconstruction and misinterpretation of the works and findings of the Survey, with the result that the impression may be created that the Survey arrived at certain conclusions at which it did not arrive." Mr. D'Olier followed that with a reiteration of his belief that strategic bombing had contributed a pretty good share to the ultimate decisions in both Germany and Japan.

But let's quote accurately from the report itself. On Germany:

"The German experience suggests that even a first class military power . . . cannot live long under fullscale and free exploitation of air weapons over the heart of its territory. *By the beginning of 1945, before the invasion of the homeland itself, Germany was reaching a state of helplessness.* Her armament production was falling irretrievably, orderliness in effort was disappearing and total disruption and disintegration were well along. Her armies were still in the field. *But with the impending collapse of the supporting economy, the indications are convincing that they would have had to cease fighting—any effective fighting—within a few months. Germany was mortally wounded.*" (The italics are ours).

On Japan:

"In the final analysis, the Japanese military machine had lost its purpose when it could no longer protect the Japanese people from destruction by air attack. General Takashima, when asked by the Survey as to his reaction to the Imperial Rescript, stated that the surrender had become unavoidable; *the Army, even should it repel invasion, could no longer protect the Japanese people from extermination.* (Again, the italics are ours).

Marshall Andrews is a good personal friend of ours. The arguments in his book we have hashed over with him many a night over a tankard of ale in the National Press Club. We know that he is not the voice of any propaganda machine; the arguments are his own and they are sincere and honest. For that reason, his book, well written and well organized, is worth reading. Any airman interested in the eternal air power argument should know the views of the other side, and *Disaster Through Air Power* is the best presentation of the ground man's view we have ever read, although there is little in it with which we can agree.

Production Spotlight

Mighty Mouse: The Navy has developed a new air-to-air rocket which has "greater speed and range than the aircraft rockets developed during the last war," although how much greater the official announcement did not say. The rocket, known as the "Mighty Mouse," has been successfully test fired by a Navy attack plane, the Douglas AD Skyraider.

With an apparent back-of-the-hand to the Air Force's Ryan XAAM-A-1 "Firebird," another air-to-air missile announced in November, the Navy referred to the Mighty Mouse as the "first *successful* air-to-air rocket."

Designed for use with a new type rocket launcher now under development, the Mighty Mouse is built with folding fins, which reduce drag on the "mother" plane and permit a greater carrying capacity. The rocket was developed and tested at the Naval Ordnance Test Station, Inyokern, Calif.

Turbo-Prop Convair: *Allison Division of General Motors Corp. has purchased a Convair-Liner in which it will install two of its T-38 turbo-prop engines for extensive flight tests to accumulate operating data on the reliability and dependability of turbo-prop-powered transport aircraft. Later it will be used as a demonstrator, and it may also be loaned to interested airlines for regular on-line cargo runs.*

The company said it bought the Convair-Liner because it was the existing transport type which could be modified for turbo-prop engines in the shortest possible time and at minimum cost, only minor modification to the nacelles being required. The modification work will be done at Convair's San Diego plant, where the company has its Convair-Liner production line.

The T-38 engine, developed under Navy sponsorship, develops 2,750 horsepower, compared to the 2,400 horsepower of the Convair's present Pratt & Whitney R-2800 engines. It will drive an Aeroproducts propeller.

Penetration Tests: The Air Force is now conducting a flight evaluation of three of its latest fighter aircraft to determine which will get a production order to fill a requirement for a penetration fighter. The three planes, all currently undergoing tests at Edwards Air Force Base, Muroc, Calif., are the **North American YF-93A**, a new version of the swept-wing Sabre, powered by a Pratt & Whitney J-48 jet engine developing 8,000 pounds thrust with afterburning; the **Lockheed XF-90**, a large (26,000 pounds) swept-wing plane powered by two Westinghouse J-34 jet engines; and the **McDonnell XF-88**, a 15,000-pound swept wing fighter also powered by two Westinghouse J-34's.

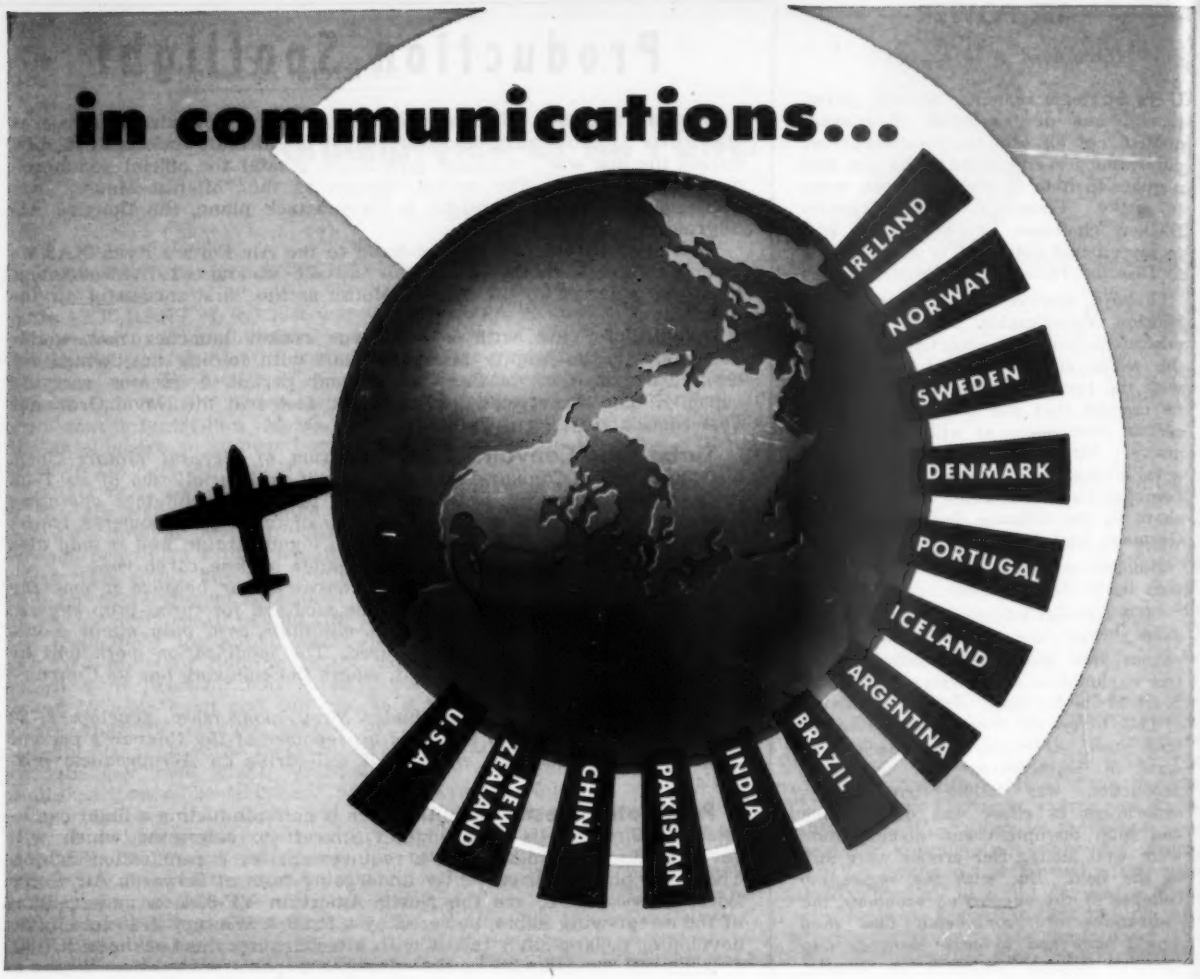
Business for Lockheed: *Lockheed Aircraft Corp. has received letters of intent from the Air Force for 178 F-94A all-weather jet fighters and 135 T-33A jet trainers. Both planes are two-seat versions of the basic F-80 design. The Air Force is also expected to order a production quantity of F-94B's, which are powered by the new, more powerful Pratt & Whitney J-48 engine.*

Big Contracts: **Allison Division of General Motors Corp.** took first prize in the Air Force procurement sweepstakes for the month of December, with $38,564,237 worth of contracts. Allison received three orders: $8,705,721 for 149 J-35-A-21 jet engines, $20,055,516 for J-33-A-33 engine spares, tools and data, and $9,803,000 for J-33-A-35 engine spares, tools and data.

Other large contracts awarded were: **Curtiss-Wright Corp.'s Propeller Division,** $785,470 for insulation and spare propeller parts, tools and related parts for Northrop YC-125 assault transports; **General Electric Co.,** $527,504 for aircraft generators, **Minneapolis-Honeywell Regulator Co.,** $508,820 for turbo-regulator systems, spare parts, etc.; **Jack & Heints Precision Industries, Inc.,** $395,666 for aircraft generators, spare parts, etc.; and **Aeroproducts Division, General Motors Corp.,** $294,829 for the design, development and fabrication of five propellers.

Flight Tests: *North American's YF-93A (above) has successfully completed its first flight . . . Consolidated Vultee Aircraft Corp. has set February 20 as the flight date of its XP5Y-1, Navy four-engine turbo-prop (Allison T-40's) flying boat . . . Fairchild Aircraft Division engineers say that the XC-120, detachable fuselage version of the Packet, will fly in April . . . Douglas Aircraft Co. is now running flight tests for certification of the Super DC-3 and the DC-6A Liftmaster.*

—J. J. H.



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Proposed CAA Flight Checks Give Uniform Pilot Ratings

By William D. Perreault

The CAA is now studying a recommendation that it adopt an objective flight check to replace the current test for applicants seeking airline air transport ratings. The tests are designed to provide a greater degree of reliability by eliminating the memory factor, minimizing check pilot bias and providing uniform tests for all applicants.

The 19-element test is based on surveys of airline accident records and interviews with 250 airline pilots to determine the critical maneuvers performed by pilots while on the job. In almost every instance the test provides a pictorial presentation of the maneuver in several degrees of accomplishment indicative of pilot skills. The check pilot has the simple task of checking the illustration paralleling applicant performance.

While designed primarily to replace CAA form ACA-324A covering airline air transport ratings, acceptance of the test by CAA is likely to lead to further studies designed to adopt this system of testing to the six-month pilot checks and to other crew testing applications, since many of the basic problems are of the same nature.

CAA Funds

The recent recommendation to CAA follows more than two years of research by the American Institute for Research of Pittsburgh, Pa., a non-profit research organization carrying out work under the auspices of the National Research Council with funds supplied by the CAA.

Thirty-two pilots from nine major airlines participated in 63 test flights during which comparative evaluation of the new system of checking versus CAA's standard test were made. The results proved the objective flight check was "practical, acceptable and reliable instrument for measuring those skills most relevant to the success or failure of the airline pilot on the job."

Specifically the tests showed that 88% of the check pilots agreed in their rating of pilot performance using the new test as compared to 63% agreement using the current CAA air transport rating test, form ACA-324A. The test was equally successful earlier when used in tests of 27 Air Force pilots at Barksdale Air Force Base, Shreveport, La., and in flight tests at CAA's Aeronautical Center in Oklahoma City.

No small part of the task of designing the new test involved the establishment of critical maneuvers. The frequency of accidents and incidents revealed by a study covering a nine-year period showed that establishing and maintaining angle of glide, rate of descent and gliding speed on approach to land were the most critical items. Ninety-nine of 787 accidents and incidents fell in this category.

Operating controls and switches followed with 92 counts, navigating and orienting with 62 counts, maintaining safe airspeed and altitude and recovery from stalls and spins with 57 counts, and following instrument flight rules procedures and observing instrument flight regulations with 45 counts, and so on.

Having established these critical maneuvers and operations, the AIR formulated a basic test which incorporated these features. Following this the optimum method of presenting each of these items on the test to insure an objective and reliable indication of performance was devised. This test was then given to the 27 Air Force pilots at Barksdale AFB.

On the basis of results of these tests the flight check was again revised and then tested again at CAA's Oklahoma Training Center. Here instructors and examiners found a number of faults with the check. Among their criticisms were charges that it was too mechanical, required too much attention away from the flight monitoring, limited the exercise of the check pilots judgment and placed the examinee on notice of "emergency" maneuvers so that he was prepared for them.

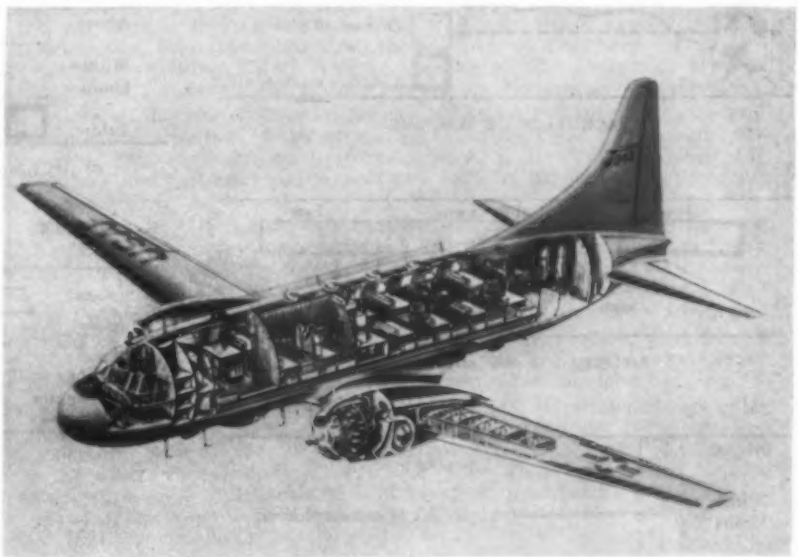
But the advantages of the check proved greater than the disadvantages and ways were found of eliminating the major objections. Typical of the important changes was the decision to provide a third pilot using the jump seat and monitoring the flight while the examiner was free to devote more time to the observation and recording of examinee performance.

Scoring System

The AIR then worked with a special pilots advisory committee of the Air Line Pilots Association. During February, 1949, this group recommended changes in allowable limits established in various parts of the report and participated in the important function of establishing a scoring system. This system of scoring is based on dividing possible answers into critical items, less-critical items and reference items which are of interest in the overall rating.

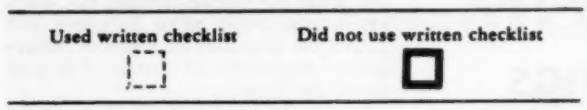
To show these readily on the pilot check pilot report, the critical items are shown in heavy black lines, the less-critical items in light lines and the reference items in dotted lines. If the pilot applicant receives a mark in the heavy black boxes he is automatically disqualified on the maneuver.

Two or even more of the marks in

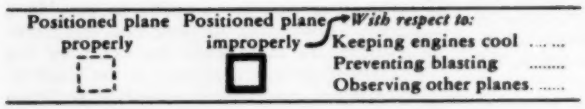


Convair Trainer—War-time navigation trainees will envy the layout of the Convair T-29, the latest thing in navigation flight trainers. The radio operator is stationed in the compartment behind the pilots. Next is the radar training section, with facilities for three students and an instructor (a longitudinal curtain separates this section into two compartments). Behind that is the main cabin, with stations and equipment for 10 students. The four bubbles atop the fuselage are astrodomes for octant sighting. The T-29 "flying classroom" is a modified version of the Convair-Liner in airline use.

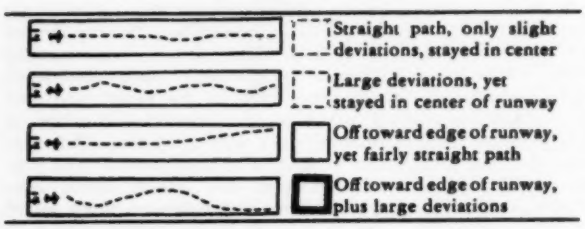
Samples From Proposed Airline Pilot Test



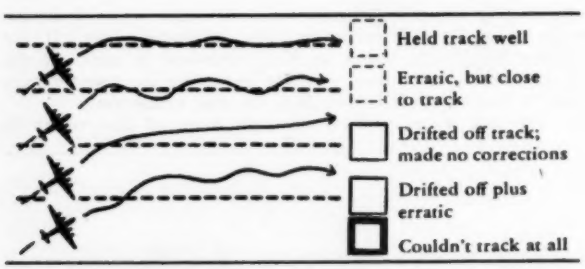
USE OF PRE-STARTING CHECKLIST



POSITIONING PLANE FOR RUN-UP

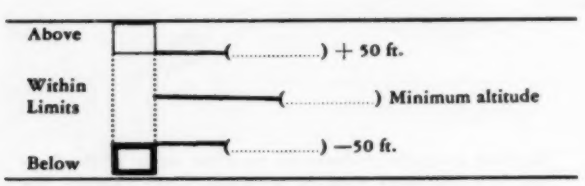

Straight path, only slight deviations, stayed in center
Large deviations, yet stayed in center of runway
Off toward edge of runway, yet fairly straight path
Off toward edge of runway, plus large deviations

HEADING ON RUN

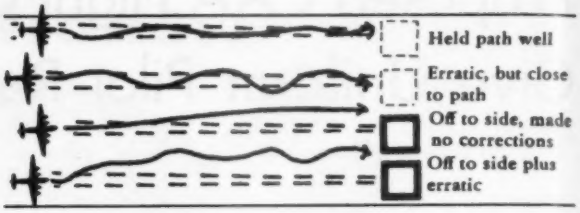

Held track well
Erratic, but close to track
Drifted off track; made no corrections
Drifted off plus erratic
Couldn't track at all

ACCURACY OF TRACKING

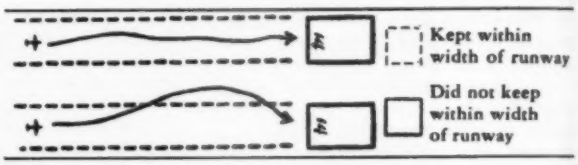
AIRSPEED DURING MANEUVERING



HOLDING ALTITUDE AT MINIMUM ALTITUDE

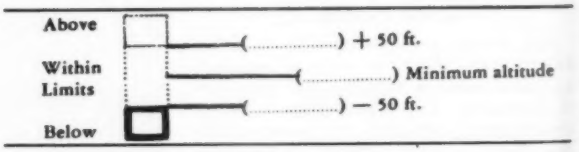


MAINTAINING LOCALIZER PATH

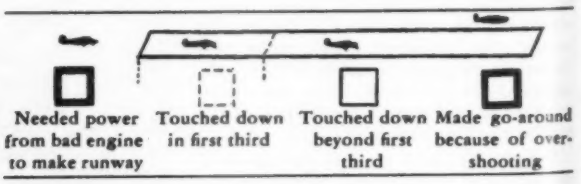


ALIGNMENT WITH RUNWAY ON FINAL APPROACH IN CLOSE

AIRSPEED DURING ENGINE-OUT PROCEDURE



HOLDING ALTITUDE AT MINIMUM ALTITUDE


Needed power from bad engine to make runway
Touched down in first third
Touched down beyond first third
Made go-around because of over-shooting

TOUCHDOWN

EXAMPLES TAKEN from the 19-element objective flight check now under consideration by CAA to replace the current airline air transport rating test. Examinee performance is entered on the form by the check pilot marking the applicable box as each maneuver is completed, thereby eliminating memory factor. Marks in the heavy boxes automatically disqualify the examinee on that maneuver; two or more marks in the light boxes disqualify, while dotted boxes do not affect the final rating.

the boxes made up of light lines are required to disqualify the applicant while marks in the dotted boxes do not affect final ratings. The individual maneuvers have importance as indicated and are the basis for a general "qualified-not qualified" rating used on the base of each of the 19 sheets. Successful applicants must qualify in all categories.

The system of scoring makes it possible for the check pilot to pass an applicant who did not complete a maneuver satisfactorily providing special conditions, such as weather, traffic or equipment problems, arose, which he felt were chiefly responsible for the applicant's poor showing. This increased the requirement for good judgment on the part of the check pilot.

Airline Participation

It was the resulting test and scoring system which was finally offered to the airlines for testing with the blessings of ALPA, ATA and CAA. Originally offered to 20 airlines for trial use, the tests were actually used by American, Chicago & Southern, Eastern Air Lines, Mid-Continent Airlines and TWA. Colonial, Delta, Northeast and Northwest also contributed data used in the program.

In the 63 test flights by airline pilots, 17 captains and 15 co-pilots participated. Each pilot was given two separate flights on different days. Four types of airplanes, Convair Liners, Douglas DC-3's and DC-6's and Lockheed Constellations were used in the flight tests. Different check pilots were used on each of the individual flights by a given pilot applicant.

Thirty-three airline check pilots participated in the tests along with 30 CAA agents who did flight checking and 59 qualified research personnel who monitored all but four of the flights. On the first flight with a pilot, two objective flight check reports were used and one current CAA check form. On the following flight two CAA forms and one objective flight check form were used.

Promising Results

Of 29 pilots who passed the objective flight check on the first flight, 27 passed on the second and two failed. Of eleven pilots who failed on the first flight, eight failed again on the second and three were successful. The high comparative reliability of these tests is indicated by results with CAA's standard test. In this group only 18 of the 26 pilots who passed the first test were successful in the second. Of 17 pilots who failed CAA's first check, nine failed on the second and eight were successful.

These tests produced ride-ride reliability coefficients, based on total scores, of .89 for the objective flight check and .35 for the CAA test report. While this is the most outstanding example of the improved reliability of the new test, the objective flight check proved superior to the current CAA test on each of the major factors.

The objective flight check "is not a substitute for the experience of the check pilot. It is a tool to record what he observes." The record of the CAA-sponsored tests, combined with the cooperative attitude of the ALPA and ATA in formulating the test, makes it likely that it will become a widely used tool in the near future.

Technical News Digest

• **American Overseas Airlines** has placed the first of two high-density Douglas DC-4's in service on the Frankfurt-Berlin service. The airplanes are equipped with 64 seats making them the highest capacity planes in use by any scheduled carrier operating within Europe, according to AOA.

•**CAA has issued a directive** requiring inspection of all Hamilton Standard 2J17 propeller blades before each flight, following two recent incidents involving the loss of engines from Boeing Stratocruisers by Pan American World Airways and Northwest Airlines. PAA lost an engine over the Pacific on January 24 and NWA on a Minneapolis-New York flight the following day. In the latter case, the engine was recovered, showing part of the propeller blade missing, leading to the conclusion that a blade crack might have been the cause. CAA officials stated that other causes might have been responsible for the engine losses and that the matter is still being investigated. The prop inspection was ordered as a precautionary measure. Hamilton Standard officials were conducting an investigation of their blades in cooperation with CAA and the airlines.

• **Coast and Geodetic Survey** has published the first of seven aeronautical route charts which will cover the U. S. on a scale of 1:2,000,000. The charts are designed for aircraft operating at high altitudes and high speeds. They are the first maps to carry omni-directional radio range data for the country as well as other navigational data.

• **Colonial Airlines recently took delivery** on its newly-converted Douglas C-54 from William C. Wold Associates. The plane was converted to passenger use by Texas Engineering and Manufacturing Co. It brings Colonial's fleet to three DC-4's and 12 DC-3's.

• **General Electric's manager** of the Aircraft Gas Turbine Division told a group of aviation writers that the company is ready "right now" to take orders for their CAA approved TG-190 turbo jet engine. It is the first axial flow jet to be approved.

• **Curtiss Wright is building** 41 Dehmel flight simulators, apparently for use by the USAF in training jet aircraft pilots. No official announcement of the work has been released. The units are being constructed at the Colombus plant of CW for the Curtiss-Wright Propeller Division. The first completed unit has already been shipped.

• **TWA will purchase six Constellations** from Hughes Tool Co. for delivery starting in February providing CAB approval is received. These new ships, combined with the present order at Lockheed for 20 airplanes, will bring TWA's fleet of Connies to 61. Deliveries are expected to be completed in time for the spring-summer travel season.

• **Aircraft Industries Association** has published a 30-page bulletin outlining the activities of the organization during 1949. The booklet describes the many services performed by AIA, lists its member organizations and the many committees and councils through which progress is channeled.

• **William H. Littlewood,** vice president-engineering, American Airlines, has taken temporary leave from AA to get a "much needed" rest. He has been in Albuquerque, N. M., undergoing treatment and will remain in the south for three or four months. M. G. "Dan" Beard will head up the engineering department at AA during Littlewood's absence.

• **Goble Aircraft Specialties** will start manufacturing industrial chemicals and cleaning compounds of the Kelite Products at its warehouse facilities at Montauk Point, Long Island sometime this month.

• **During 1949 United Air Lines** completed 98% of all scheduled miles and 92½% of all flights originated on time or within 15 minutes of schedule. Almost 75% of all schedules arrived at their destination within the same limits. This was a 9½% improvement in on-time departures over 1948 and 27% improvement in arrivals. Improvement was largely credited to the Douglas DC-6 operation now used on 70% of UAL's schedules.

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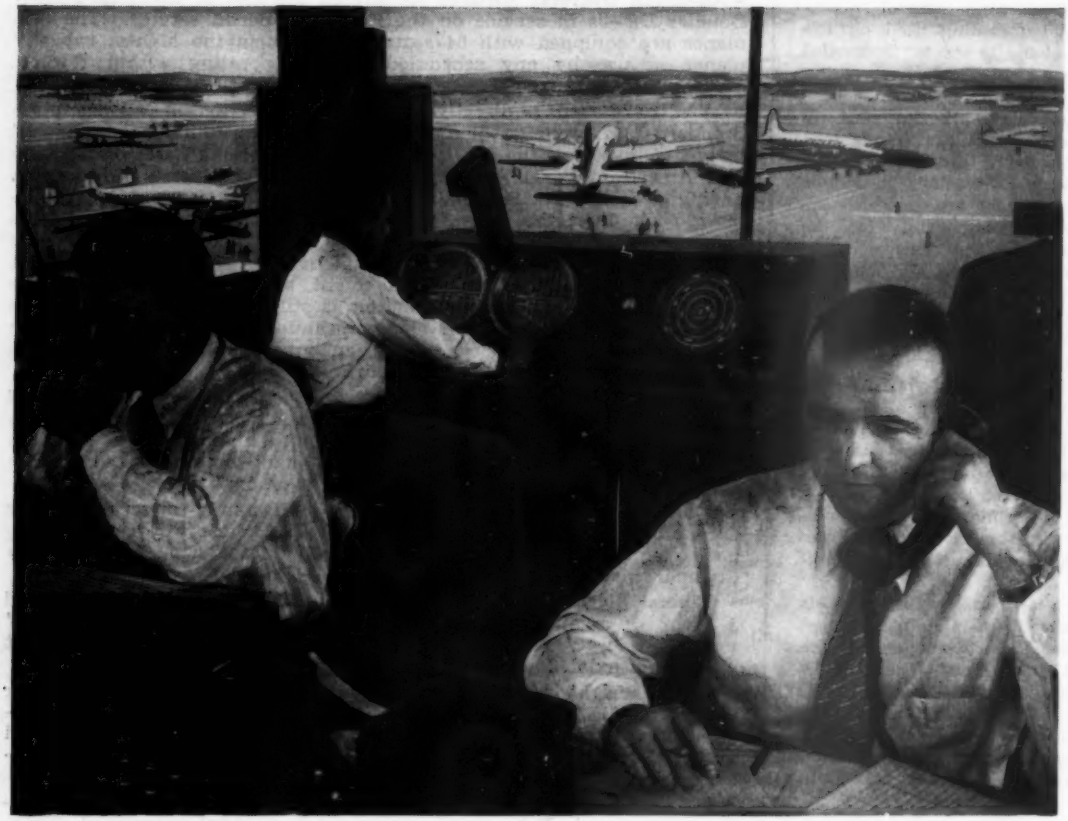
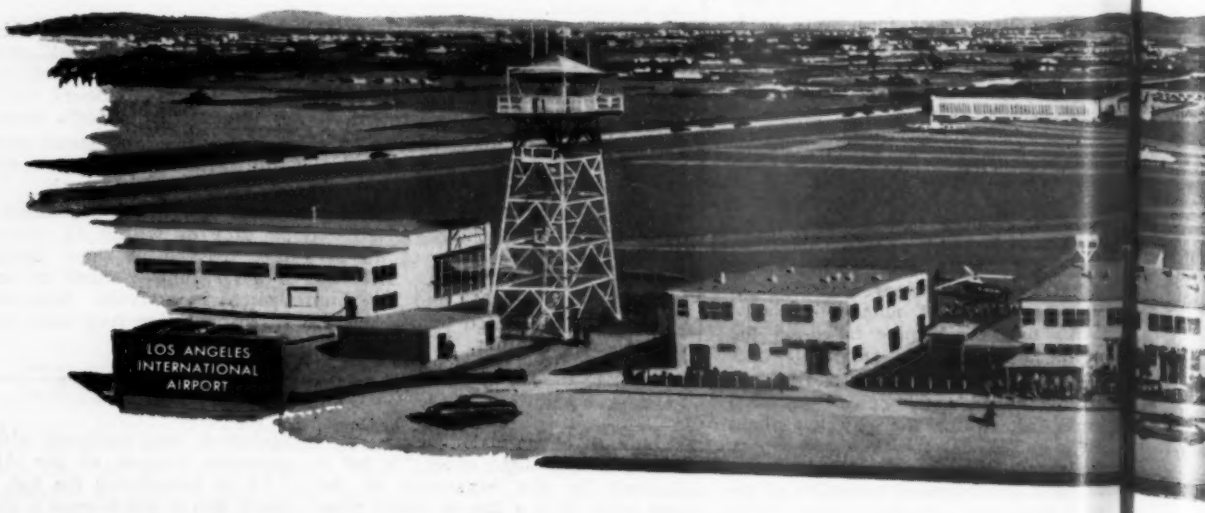


GILFILLAN'S GCA CONSOLE in the L.A. control tower contains a surveillance scope (right), and two precision scopes for blind landings. On the left is the three-mile final approach scope; in the center the 10-mile scope. Aircraft's position on final approach is shown in three dimensions accurate to ± 15 feet.



in operation at L. A. Airport

DEDICATION of GCA at Los Angeles International Airport marks a great day for Gilfillan. It signals a long step forward in air navigation and safety. It is the realization of years of GCA research and development at Gilfillan.

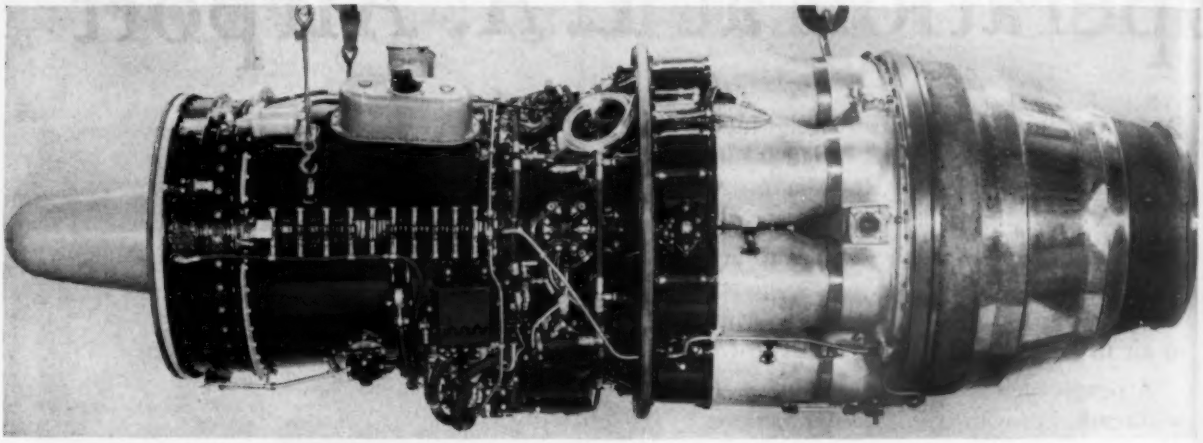
Today, folks who fly the airlines to or from L. A. Airport can relax in a new assurance of safety...secure in the knowledge that the finest in air navigation equipment protects them.

A new surge of confidence in air travel will result. For with Gilfillan GCA, airline schedules will be regular and on time, delays and cancellations rare. Airline operating costs will go down, air safety up.

82 similar GCA installations will be made at key CAA airports by 1952. Gilfillan, in cooperation with the USAF, the USN, and the CAA, is proud to have pioneered and developed the GCA of 1950.

GCA *Gilfillan*
LOS ANGELES

Gilfillan's radar surveillance antenna (right), searching through 360°, scans a radius 30 miles out and 10,000 feet up. Position of every aircraft in a 2,800 sq. mi. area is picked up and shown on the surveillance scope.



Britain's Best?—This is the Rolls-Royce Avon R.A. 2 axial-flow jet engine. It is officially rated at 6,000 lbs. thrust at sea level and weighs 2,400 pounds. It is the power used in the twin-engine English Electric Canberra bomber and in the prototype CF-100, the all weather fighter manufactured by A. V. Roe in Canada. Some releases from official sources in London have stated the power rating at 7,500 pounds thrust but these reports have since been denied.

UAL Gets 7th Stratocruiser As Production Nears End

United Air Lines has taken delivery on its seventh and final Boeing Stratocruiser. The last of the Stratocruisers for BOAC is scheduled to be delivered late in February or early in March completing the commercial production of 55 units by Boeing. Five lines are now operating the Stratocruisers: Pan American, American Overseas Airlines, United Air Lines, Northwest Airlines and British Overseas Airways.

Boeing will continue its production line of C-97 aircraft well into 1951 and this will make it relatively simple to reinstate the commercial line with a minimum of cost should the need arise. About 12 of the order of 64 C-97's have been delivered to date.

Boeing indicated that the sale of the Stratocruisers resulted in substantial loss. Exhaustive studies have indicated that the sale price of the Stratocruiser on any future orders would be substantially higher than on previous orders.

CAA Files Complaints Against Four Airline Pilots

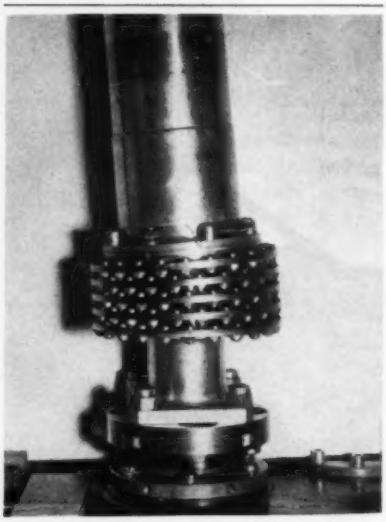
CAA has filed complaints against four airline pilots involved in two mid-air collisions and requested that their licenses be suspended. Two of the pilots concerned are George F. Knuth and Malcom S. Ware, pilot and co-pilot respectively of Pan American Airways, who were crew members on the Constellation involved in a mid-air collision with a Cessna 140 over Port Washington, Long Island, in January, 1949.

CAA asked that the CAB suspend the airline transport pilot certificate of Knuth and any airman certificate of Malcolm S. Ware.

The complaint followed an earlier CAB accident report which cited the probable cause of the accident, in which the private pilot and his passenger were killed, as the joint failure of the Constellation pilots to observe and avoid the Cessna and of the Cessna pilot, while on an airway, to remain alert and avoid the larger aircraft.

The action against the Capital Airlines pilots Jack N. Bolick and Leonard F. Davis followed CAB's report on the collision of the Capital DC-3 with a private aircraft near Milwaukee last August.

CAA charged that the pilots operated the ship in a "careless and reckless manner so as to endanger the lives and property of others." Specifically the charge stated that the plane was operating off course and at less than 1,500 feet altitude at the time of the collision.



New Drive—The flexible drive coupling shown here, developed by the Eclipse Pioneer Division of Bendix, offers new possibilities in remote location of engine driven gear boxes. Wafer-thin discs used in the coupling make it possible to handle torque loads up to 300 horsepower at speeds to 9,000 rpm with misalignment as much as 3½ degrees. In tests single pairs of discs have been subject to full operating speeds and flexure loads at 8,000-11,000 rpm and at a continuous misalignment of 10 degrees.

Two New Features Added To CAA's Airman's Guide

Two new aids to airmen have been added to the bi-weekly Airman's Guide published by the Civil Aeronautics Administration. A listing of airports where weather information is available and a listing of frequencies guarded by CAA communications stations and control towers are now published.

In addition, the Flight Information Manual, which complements the Guide, will include the following information on danger areas: locations, times when activated, which ones may be flown over above certain minimum altitudes. and to whom requests or permission to fly over or to land in danger areas should be addressed.

Record Mail Load

A Pan American Airways Stratocruiser, flying from Honolulu to San Francisco on December 13, is credited by Post Office Department officials with having carried the heaviest load of mail ever recorded on a passenger flight.

In a letter to the carrier, Paul Aiken, Assistant Postmaster General, said that Pan Am's flight 802, carrying 234 pouches and 36 outside pieces of mail weighing 8,183 pounds, is believed to have established a new record. In addition, there were 46 passengers on board.

At 20,000 feet the air is not air conditioned for human consumption. It is colder, thinner and has less oxygen than required for supporting human life.

To keep cabin temperatures and pressures at the required levels, Stratos designs, develops and manufactures precision aircraft accessories of a specialized type for cooling, pressurization and air conditioning.

Pan American Airways "Gold Plate" Constellations, equipped with small, lightweight Stratos S60-1 cabin superchargers have been experiencing fewer mechanical delays and giving air travelers more flying comfort.

Other reliable Stratos designed and manufactured units are in use in new military and commercial airplanes built by Lockheed, Boeing, McDonnell, North American and Grumman. In these airplanes, the safety of the airplane and its ability to accomplish its mission depends upon the pressurizing and cooling system.

Stratos engineers are available to aviation and related industries to design and manufacture units tailored to particular requirements and to assist in the solution of any problems relating to precision high speed machinery.

You are invited to consult STRATOS for your cooling, pressurization and air conditioning requirements. Write today —no obligation, of course.

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Cabin Supercharger

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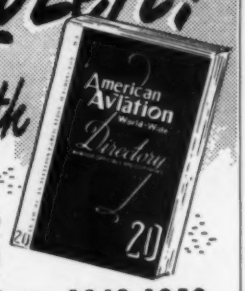

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OPERATIONS-MAINTENANCE

Going Down—This photo shows the tail of the United Air Lines' Boeing Stratocruiser being lowered into the horizontal position. With the tail in its lowest position, the height of the aircraft is reduced by 11 feet 8 inches making it possible to move the aircraft into and out of hangars which would not otherwise accommodate the ship. Lowering is accomplished by a tripod-mounted which attaches to the horizontal stabilizer and rudder. Folding can be accomplished in as little as 20 minutes.

TECHNICAL LITERATURE

LIGHTING BULLETIN: Line Material Co., Airport Lighting Div., East Stroudsburg, Pa., has published a 12-page illustrated bulletin entitled "L-M Fixed Focus High Intensity Airport Lighting." The bulletin is devoted to a comprehensive description of the construction and application of this unit, bills of material and schematic wiring diagrams for multiple and series circuits, etc. Bulletin 49050.

FIREWALL CONNECTORS: Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif., has released an eight-page engineering bulletin on steel-shell aircraft firewall connectors. Bulletin ANF illustrates and lists the complete line of AN type flame barrier and fireproof connectors used on aircraft firewalls.

HOSE COUPLINGS: Avico, Inc., East Main Road, Portsmouth, R. I., P. O. Box 1090, is circulating a four-page brochure describing their integral angle hose couplings. The brochure illustrates the wide variety of hose couplings available and outlines typical aviation applications.

WIRE ROPE: Macwhyte Company, Kenosha, Wis., has published bulletin 49-30 describing 133 different sizes and types of stainless steel and monel metal wire ropes. The illustrated bulletin includes physical layout, breaking strength in pounds and weight in pounds per 100 feet. Requests should be addressed to the attention of R. G. Diehl.

SHOP EQUIPMENT: Precision Equipment Co., 3714 N. Milwaukee Ave., Chicago 41, Ill., has released a 12-page catalog featuring steel shelving, clothing lockers, industrial seats, parts cabinets, work benches, waste receptacles, etc.

Among the Suppliers

Bernard M. Costello, formerly vice president and factory manager of B. F. Goodrich Rubber Co. of Canada, Ltd., has been named vice president-manufacturing, and **William E. Ireland,** who has been with B. F. Goodrich for 15 years, has been named vice president-sales for the **International B. F. Goodrich Co.**

William A. Keetch, formerly with Lord Manufacturing Co., has been designated by **Robinson Aviation Inc.,** Teterboro, N. J., as chief of Product Engineering, and **E. S. Titus** has been made chief of research and design for the company . . . The **Elastic Stop Nut Corporation of America,** Union, N. J., has appointed **Robert F. Fettig** district manager for the Detroit and Michigan sales areas . . . **A. L. Paquette** has been named manager of aviation products for **Westinghouse Electric Corp.** with headquarters in Dayton, Ohio. He will handle negotiations on all the company's aviation apparatus with the U. S. Air Force.

Fettig

F. B. Law has been appointed manager of manufacturing for **General Electric's** Aeronautic and Ordnance Systems Divisions to succeed **Frank T. Lewis,** who has been named manager of manufacturing, Small Apparatus Divisions.

Coast Paint and Chemical Co., Los Angeles, has purchased the formulae, processes, procedures, engineering blueprints and manuals of **Technical Coatings, Inc.,** of Pasadena. Walter W. Smith of Technical Coatings becomes chairman of the board, and L. C. Boller becomes vice president and chief chemist of Coast Paint, and D. M. MacGregor remains as vice president.

Ansul Chemical Co., Marinette, Wis., has announced the election of four new directors: Leonard C. McKesson, Arthur C. Pope and Stanley R. Holmquist, all officials of Ansul, and A. J. Whitford, president of the First National Bank of Marinette.

C. B. Cort and C. J. Brunton, **Douglas Aircraft Co.** service representatives, are establishing headquarters in South America to test out a three months personal representation plan in parts sales and service. Cort will be based in Rio de Janeiro and Brunton will go to Caracas . . . **The B. F. Goodrich Co.,** Akron, Ohio, has named **Russell S. Colley** manager of the sales of Rivnuts and Rivnut tools . . . **Airborne Accessories Corp.,** Hillsdale, N. J., has appointed **William R. Hopkins** director of engineering in charge of all engineering and development activities. He was formerly chief engineer, Special Products Div., **American Bosch Corp.**

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has promoted **Fred Kaiser** from midwest regional manager to field sales manager. **Clarence L. Peterson,** who has been Pacific regional manager, will succeed Kaiser in the midwest area.

Extra Section

By William D. Perreault

CAB is circulating a proposed revision to the civil air regulations that would change the present day method of rating mechanics. This was covered in AMERICAN AVIATION for January 1. Indications are that we're going to have more specialization in the future. Specialization—that's the system under which we learn more and more about less and less until finally we know everything about nothing.

As a mechanic I'm against it. Strangely enough some folks think the mechanic and trade union will be mighty happy with specialization. The mechanic that wants specialization has plenty opportunity for it under present day conditions. The place for specialization is in large airlines where the volume of work in a given field justifies keeping one or more men full time on a given type of work.

This is where specialization is needed. It doesn't take regulations to accomplish it. Walk through the airline shops. There's specialization everywhere. The airline of today establishes specialization to suit needs peculiar to its own operation. And the needs do not generally fit the pattern suggested in the proposed regulations.

The present A&E mechanics ratings are well suited to light-plane operations where the equipment is not particularly complex. It is a good diploma for the future airline mechanic showing he has the basic background—a foundation on which the airline can build a worthy maintenance man.

Perhaps there is a need for separate transport and light plane mechanic ratings. But when we create a multiplicity of ratings we go to the heart of every operation. Where are the future supervisors and administrators to get rounded experience? This is already a problem in airlines that have found specialization economically mandatory.

Furthermore, there are a variety of jobs in every maintenance shop, airline or fixed base operation, where all-round knowledge is critical. There's the trouble shooter, line maintenance man, and inspector. Which of these many ratings will we give them? Where will they get the experience to qualify for the multiple ratings and how will we allocate their working time to cover the continuing experience requirements?

THE airlines have recently been working with the mechanic training schools to provide a curriculum which will make the graduate of an A&E mechanic school more useful to himself and to the industry. Here's a field in which much can be accomplished. Once there is full realization on the part of the school authorities about the airline requirements, certainly they can meet the basic needs within the framework of present ratings or with the addition of two or three groupings to cover relatively new fields, such as electronic equipment.

There is a claim that regulations are being minimized with more and more authority delegated to the industry, yet here is an example directly to the contrary. It is a simple matter of fact that the safety record and improved performance of transport operations is due to surveillance by management beyond the basic requirements of ratings—whether they are mechanic ratings, repair shop certificates or operations certificates.

Apparently authority which has long been delegated to individuals and to organizations would be curtailed sharply by the proposed ruling. What is the record which justifies this backward step? It was not so long ago that proposals were under consideration to let the airlines operate in much the same manner as a manufacturer. That is, to grant them a certificate and then let them determine how best to maintain suitable standards.

Instead the proposed regulations would even introduce requirements for additional certification of manufacturers who engage in certain types of maintenance. Which way are we going and why? We haven't been able to find any representative group favoring such changes.

Some provisions of the proposed regulation are sound. It is not evil in itself but one wonders how the number and type of classifications can be justified.

CAB has set April 1 as the deadline for industry comments. Are you sending them yours?

Gate Valve

The Parker Appliance Co., 17325 Euclid Ave., Cleveland 12, Ohio, has introduced a new lightweight gate valve qualifying for 75 psi aircraft fuel system service. Supplied for service on high temperature air, oil, water-alcohol mix-

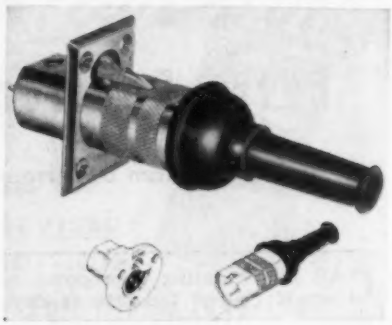
tures and other fluids. Produced in sizes of 1¼", or 1½" (1¾ pounds) and 2" (⅝ pounds). Valves are made of welded alloy aluminum body halves and utilize line pressure for sealing. Operating temperature ranges from minus 65 degrees fahrenheit to plus 135 degrees fahrenheit. Operates at pressures of 6 psi vacuum to 75 psi, with low pressure drop: 1.07 psi at 300 gpm for the 1¼" valve size. Surge pressures as high as 150 psi are accommodated. Shaft and gate seals are accessible from outside and are removable without special tools. 90-degree handle travel makes valve suitable for manual operation, push-pull control or electrical operation. Can be provided with thermal relief.

Portable Floodlight

Natale Machine & Tool Co., 339 State Highway No. 17, Carlstadt, N. J., is marketing an emergency portable floodlight, the latest in a series of Circle D flood and spotlighting equipment. Suitable for general floodlighting assignments, the Circle D-150 is a six-pound unit which is 11½ inches high, 9 inches wide at the base and 11½ inches long. It is constructed of alloy cast aluminum. A spring-mounted mogul receptacle holds a Radiant R-40 sealed beam flood against a vibration seal. An elevation adjustment knob is used on the light and the base is "tip-proof." Sealed beam lights of 200, 300 and 500 watts can be accommodated at 115, 120, 125, 230 and 250 volts.

Audio Connectors

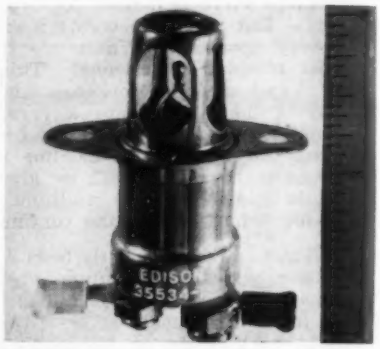
Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif., has designed a new series of audio connectors in cooperation with the Audio Facilities sub-committee of the Radio Manufacturers Association. The new series of connectors, which



provide for standardization of connector equipment, are known as the "UA" series by Cannon Electric. At present the series consists of two plugs and four receptacles, carrying three 15 amp contacts rated at 1500 volts minimum flashover. Shells are of steel, receptacles of zinc. The polarized plug provides a safety latchlock device, socket contacts are full-floating and gold plated. Cable entry is ½ inch. Additional details available in bulletin UA-1.

New Thermocouple

Thomas A. Edison, Inc., Instrument Div., West Orange, N. J., has announced the Model 108-10 thermocouple for use in the Edison aircraft fire detection system. The new thermocouple permits opera-



tion in continuous ambient temperatures up to 700 degrees fahrenheit. This is made possible by terminal studs integrally molded in a new mineral compound. The new unit meets requirements of CAA Technical Standard Order C-11 and SAE specification AS 401. It is physically interchangeable with its former counterpart, Model 108-8. Standard An type locknuts are supplied with each unit along with new terminals which will accommodate the larger diameter insulation of the new "Firezone" aircraft wire of Air Force specification 32659.

Inquiries about equipment on this page may be sent either to AMERICAN AVIATION or direct to the manufacturer.

Readers looking for sources of special equipment are invited to write to AMERICAN AVIATION's equipment editor. Every effort will be made to provide information on manufacturers and suppliers who are in a position to furnish or develop needed airborne or ground equipment.

Axial Flow Blowers

Rhodes Lewis Co., 4008 West Jefferson Blvd., Los Angeles 16, Calif., is producing a new line of custom built high-pressure, axial-flow blowers for AC or DC operation. The five-inch blower has a capacity of 250 cubic feet per minute with a static pressure at outlet of two inches of water. It weighs only 2.5 pounds with a 400-cycle AC motor. Another unit is the three-inch blower with 70 cubic feet per minute capacity

with no static head. Provided with a universal mounting, this model is being used for aircraft cockpit cooling and frost dissipation. Aluminum construction and blades with air foil sections and diffuser vanes designed for high output. Special blowers for specific installations requiring torque limitation or constant volume can be supplied.

Sound Proof Booth

Executone, Inc., 415 Lexington Ave., New York 17, N. Y., has developed a sound-proof booth for use in high noise level areas. The units, Model M-15, are for use with dictating machines, sound system microphones and other types of intercommunication systems where

background noise is undesirable. Constructed of wood, finished in dark brown, the booth is lined with acoustic insulation board and is 13½" high, 13½" wide and 13½" deep. Price is $13.50.

"It figures...

to Save You Money"

$$$$$$ $$$$$$$

Pilots demand it!
Instruments de
Safety

Pilots today are demanding an independent standby power package to insure operation of their electric flight instrument group. For they know that even the finest instruments money can buy, are reduced to dangerous liabilities when faulty power renders them useless or causes them to give incorrect indications. Eclipse-Pioneer's answer is a two-component package consisting of a lightweight ENGINE DRIVEN ALTERNATOR, and a small, panel-mounted POWER FAILURE INDICATOR. Normally, the small black face of the indicator is inconspicuous in its mounting near the gyro horizon, but if conventional power becomes faulty, a fluorescent disk instantly appears—giving the pilot approximately four minutes to switch to standby power before the gyros will precess. Two alternators are available for this system; one for electric gyro flight instruments only and the other for an electric compass as well as the flight instruments. Either one is conveniently installed on the engine vacuum pump drive pad. Here is instrument insurance that pays its own premiums—another example of the developments that have made Eclipse-Pioneer the leader in its field.

Bendix
AVIATION CORPORATION

Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, New York

Airlines Split on Package Air Tour Merchandising

By Eric Bramley

The U. S. domestic and international airlines are divided on the controversial question of how package air tours should be prepared and merchandised, but a majority of them lean toward working through tour operators rather than getting into the tour business themselves.

Although it is not possible, for competitive and accounting reasons, to obtain an overall industry figure on the amount of revenue that package air tours are producing, there seems little doubt that they show promise of becoming an increasingly important source of business. With the airlines aggressively seeking to promote pleasure travel in the postwar period, the air tour has become one of the industry's most rapidly-expanded activities.

In the handling of these tours, most airlines are cautious about stepping on the toes of one of their important revenue producers, the tour operator. If an airline "wholesales" a tour—furnishes not only the transportation but makes hotel arrangements, ground transport, side trips, etc.—and either sells the package itself or through retail travel agents, it runs the risk of incurring the wrath of tour operators whose business it is to perform a similar function—the wholesaling of tours.

For this reason, airlines have been treading carefully. Almost all of them will sell package tours, which they have prepared in cooperation with operators, over their own counters if the customer desires it that way. But when receiving such a request, they in most cases first try to send the customer to a travel agent.

Forced Into Wholesaling

Where the airlines have gone in for wholesaling, it has generally been a forced move resulting from the reluctance of tour operators to spend money putting together certain types of packages. This has been particularly true in the off season, when an operator might not be able to see a potential profit in offering a package to Florida in the summer, for example. In the future, more airlines may offer their own packages where there is no interest on the part of tour operators.

Although most carriers deal through operators, an American Aviation survey discloses some who now prepare their own packages. Outstanding among these is **Chicago and Southern Air Lines**, which claims to have "pioneered the current trend of the airlines putting together and merchandising tours over their own lines," and which has built it into a $400,000-a-year business. C&S's eight packages are, of course, available to agents but the airline also does its own selling as well as preparation.

"We aggressively promote the sale of these cruises by travel agents, providing them with folders and other literature which can be imprinted with their individual address and message," said Tom Miller, C&S general traffic and sales manager. "Most of the agents seem to like the cruises because they are exceptional values and are easy to sell. About 50% of our total sales are made by agents and the rest by our own organization.

"We do not leave the sale of cruises exclusively to agents because to our way of thinking that would be just like depending on some one else to handle all our sales, and for the further reason that we already have a good-sized sales force which can handle cruise business right along with their other duties . . .

Low-Income Market

"Sales of cruises are increasing month by month and in 1949 we took in approximately $400,000 from just the air transportation portion of the packages. Most of our cruise sales come from low income groups (stenographers, teachers, clerks—many of them first-riders) and we feel that we are developing an entirely new market for our product."

United Air Lines last year went into the package tour business "on its own" for the first time. Explaining that UAL participates in four types of tours, Harold Crary, vice president-sales and advertising, said that "we prepare and operate certain package tours ourselves making reservations not only for the flights but for all accommodations. Such tours are sold in our offices as well as through travel agents. Typical are the Hawaiian . . . and Rocky Mountain tours . . . We expect to prepare and operate similar tours this coming summer to Yellowstone and Yosemite.

"We encourage travel agents to prepare their own package tours featuring United and to sell them themselves . . . United is also featured in tailor-made independent air tours . . . which are sold by agents . . . This coming summer we will participate in packaged sea-air tours . . . to Hawaii."

Capital Has Both

Capital Airlines, in addition to developing tours with agents, has also prepared its own. However, it turns them over to agents for sale, and does not handle them over its own counters. "This year we intend to expand the possibilities of these tours and take a more vigorous approach to the sale and promotion of this pleasure and vacation business," said James W. Austin, vice president-traffic and sales.

Delta Air Lines "has set up and operated our own package tours for the past three summers," Laigh Parker, vice president-traffic and sales, stated. "How-

Handling Instructions—United Air Lines is conducting a series of meetings across its system at which flower growers and wholesalers demonstrate the fine points of flower handling to the airline's cargo crews. Shown at the Chicago demonstration as he illustrates a detail with outspread hands is James Sykora, president of the Chicago Wholesale Florists Association.

ever, it wasn't until last summer that we made any concerted effort . . . Last summer we sold in excess of 800, all of which were designed to attract passengers in the middle and lower income brackets to Miami and Miami Beach during the summer months . . .

"In addition to selling them through our own ticket offices, we have always made them available for sale by the travel agents. Our reason . . . is two-fold; first is to make them easier for our prospects to purchase, and secondly, not to compete directly with our travel agents."

National Airlines hasn't prepared and sold its own tours, but Walter Sternberg, vice president-sales, said the company may do this if it doesn't get desired results through agents. "It is human nature," he asserted, "for the tour operators and travel agents to 'fish where the fish are biting' . . . When everyone wants to go to Florida, they will actively promote Florida travel but when public vacation interest is centered (elsewhere), we are apt to be left to shift for ourselves in the development of our off-season business . . . We were able . . . to encourage some of the tour operators to work on off-season tours.

Off-Season Promotion

"We think that the success of our off-season promotion last year will result in more . . . operators and agents realizing the profit potential . . . If this results in the . . . operators and agents doing the merchandising job we expect of them, National will not go into the tour operating business itself. If we cannot get the complete coverage and promotional effort required, we may have to go into it in certain places or for certain types of tours."

Airlines that do not prepare their own tours are:

Pan American World Airways (John Muhlfeld, general sales manager—also speaking for Panagra): "At the present time, Pan American does not operate its own tours, but cooperates with established tour operators and travel agents in promoting all-expense tours . . . Such . . . promotions are supported by Pan American advertising and sales promotion . . . Pan American's offices are trained to handle direct tour inquiries in order to serve the public . . ."

Northwest Airlines (L. B. Kinports, director of sales): "It is the policy of Northwest . . . to sell any package tours advertised in our literature through approved travel agents *only* . . . We feel that Northwest is primarily in the business of transportation and that the sale of any form of pleasure or vacation travel should remain in the hands of the travel agents."

TWA (E. O. Cocke, vice president-sales): "TWA initiates tour programs and produces folders in cooperation with leading tour operators, rather than working exclusively with any one operator . . . The tours . . . can be sold by approved sales agents, other airlines and our own personnel. The reason our own personnel also sell these tours is we have learned from experience that it is necessary at times in order to protect our interests. As you know, most tour sales are made by travel agents, and our folders are designed to do as much of a selling job as possible for them."

Control Room—United Air Lines' Stewardess Alice Mikas is shown at the control panel in the cabin of the Boeing Stratocruiser. The telephone at the left connects this station with the crew on the flight deck and with the lounge on the lower level. Switches and other controls operate the cabin lighting and control cabin heating.

Four Activities

American Airlines and American Overseas (J. H. Theilig, manager of agencies): "Package air tours break down into . . . four activities: (1) the production of tour folders, (2) distribution of these folders, (3) selling of the tours, and (4) operating the tour arrangements. An air carrier can handle the first three with his normal facilities, while the operation of the tour arrangements would require additional organization . . . The tour operator is, therefore, best equipped to handle this phase . . .

"Another consideration is . . . that an air carrier needs air tours to create traffic during the off seasons, to destinations which have not as yet been established in the public favor, or for specific schedules with a light load factor. A tour operator is not interested in spending his money on tour folders for the off season or to destinations for which there is no demand . . .

"Last but not least, the air carriers need air tours which are so economically priced that they will appeal to masses of people. The tour operator cannot afford to quote such a low price because the expense of printing the folders and merchandising the tours have to come out of the commissions and the mark-up of the tours. The air carrier . . . can afford the expense of printing the folders and marketing the tours because his revenue lies in the air haul involved . . .

"The most satisfactory treatment of air tours lies in cooperation between the carrier and the tour operator, the carrier handling the printing and the mechandising . . .while the operator takes over the performance . . . All air tours so far produced by American are based on such cooperative arrangement. We have run into very little opposition from the tour operators; in fact in almost all instances we have had their cooperation. . . We find that tour operators do not object to a carrier's package tour as long as they handle the tour performance.

Watch Airline Moves

"However, they keep an eagle eye out for any symptoms indicating that a carrier goes into the field of tour operation, and their reaction as a rule is immediate and violent. Regarding the reaction of sub-agents, meaning travel bureaus, when an airline office sells package tours . . . if an agent is inactive and disinterested, it doesn't make much difference . . . whether he likes it or not. If an agent is active and interested . . . he is in almost all cases better equipped and experienced to sell these tours and, therefore, prospective clients usually wind up in his office."

Colonial Airlines (A. M. Hudson, vice president-public relations): "The air carrier should not act as a wholesaler, for then it is in competition with the wholesaling travel agent . . . The air carrier should encourage the sale of package tours through travel agents, but should also be able to make available to the public these packages through their ticket offices . . . From the airline standpoint, it is much more desirable to have the package sold through the agent, because the time and correspondence involved in handling inquiries and the actual selling of the package by an airline consumes time which is much more costly than the 10% commission paid to the agent for the sale of the package."

Western Air Lines (Arthur L. Hewitt, agency and interline sales manager): In the postwar period, Western's "activity has been to encourage the travel agent to develop and package all-expense air tours in which we could participate partially or wholly. Success of this activity still leaves much to be desired, but we believe that in the lowering of air fares, air coach service, etc. . . . that the air package tour will, in the very near future, come into its own . . . An everchanging market continually requires research, and a change in policy might well bring us into a full-fledged campaign of merchandising and selling all-expense package tours through our own offices, other carrier offices (on an interline basis) and travel agents."

CAB Turns Down Rome Charter Plans

The Civil Aeronautics Board has turned thumbs down on the charter flights which Pan American World Airways proposed to operate to Rome during Holy Year in cooperation with Felix Roma, Italian travel organization, and has also ruled out a Rome charter proposal of a large irregular carrier.

The Board denied Pan Am's request to fly one daily round-trip to Rome for Felix Roma during the period June 1-Sept. 30, and withdrew the conditional approval it had given the airline to operate eight round-trips a month during the off season travel periods of 1950. Pan Am's applications had been vigorously opposed by TWA, the only certificated U. S. operator to Rome.

Pan Am, said CAB, would lose money on the Felix Roma deal, thus increasing its need for government support. Furthermore, it said, additional facts had led it to conclude that the proposed traffic could not be regarded as limited group travel, but would be "comprised of individual Catholics, of whom there are over 25 million in this country."

"Pan American originally submitted certain cost data intended to show that a profit of $965 would be realized on each flight," CAB noted. "When protesting carriers brought out that rectification of error in computing mileage would wipe out such profit, Pan American responded by reducing its cost estimates on another item. The Board has accordingly made a preliminary cost study . . . which indicates that even on the 'added cost' basis used by Pan American, it stood to lose rather than to gain, even as shown in its revised estimates.

"On an 'allocated cost' basis . . . the loss could well amount to over $4,000 per round-trip flight," CAB said, adding that this did not include any losses to Pan Am resulting from diversion from its scheduled services. "In addition, it appears inevitable that there would be losses . . . to other carriers . . ."

The proposal of Federated Airlines, large irregular, to operate 395 round-trip charter to Rome in 1950, was turned down because it would involve a serious disruption of the certificated air service pattern with substantial adverse diversionary effects, CAB said.

Four Airlines Join ATA; Flying Tiger Line Included

Admission of The Flying Tiger Line to membership in the Air Transport Association has brought the total membership of certificated carriers to 39.

The Flying Tiger Line along with Bonanza, Trans-Pacific and Turner Airlines Corp. were voted into membership at the recent meeting of the Board of Directors of ATA. The Turner application was approved conditionally upon compliance with CAB regulations pertaining to interlocking relationships.

Airline Commentary

By ERIC BRAMLEY

WE WERE talking the other day with one of our airline buddies—a reservations agent. "How's business?" we asked. "Not so good—could be much better," he said. "One of the troubles is schedule changes—we've had about three major changes in the past few weeks. How can I handle passengers—especially connecting ones—when that keeps happening? I assume, of course, that the bigwigs have good reason for the changes, but they never pass the reason on down the line to us. We're left in the dark, and that doesn't help any." Sounds to us like he has a good point. When topside lets the boys down the line know *why* something is being done, it not only helps morale but undoubtedly helps them in handling passengers.

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One of our staff members went on a trip recently that involved traveling over a feederline. He had an experience that qualifies him as the year's outstanding mishandled and kicked-around airline passenger. We can't relate the whole sad tale here, but do want to say that, because of weather, he and several other passengers were landed at a field some 50 miles from the scheduled stop that was their destination. The airline had made no arrangements to get them to destination, and had no suggestion to offer other than they could go into town and ride to their city on a bus. It finally ended up with the passengers hiring a limousine, at their own expense, for the 50-mile ride. This particular feeder and all others are in the early stages of building up their passenger business, and no one has rooted harder for them than we have. However, this definitely is not the way to win friends. It'll drive away business and give them (and the trunk lines) a bad name. Maybe some procedures need to be overhauled.

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You think you know all about airline fares? Get out your paper and pencil and *Official Airline Guide*. John Brawley, TWA lead agent in St. Louis, tacked the following problem on the bulletin board to see if everyone was on the ball: Family of seven—man, wife, 18-year-old son, two 12-year-old daughters (twins) and two 16-month-old infants (more twins)—buy round-trip tickets New York to St. Louis, family plan both ways. They leave LaGuardia early Monday morning. But—husband gets sick in Indianapolis and deplanes. Family continues to St. Louis. Son gets married in St. Louis and decides to take wife back with him (she's 23 years old). The family starts back to LaGuardia on Monday, except the 12-year-old twins. They start back on Tuesday. The man joins his family in Indianapolis. But—the flight cancels (weather) at Pittsburgh. Husband continues to New York by train. Son's wife has words with mother-in-law and goes back to St. Louis. By this time the twins have caught up with the rest of the family (except Pop, of course) and the whole bunch continues on Tuesday on the first available plane to New York. Question: What is the total fare, without tax, for all parties? Joe Sofko, TWA St. Louis, came up with the correct answer. Can you?

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D. T. Cook, Challenger Airlines' station manager at Riverton, Wyo., was desperate. He sat down and typed an inter-office memo (Subject: Riverton livestock) to Jerry Kitchen, general traffic and sales manager, as follows: "We at the Riverton station have been forced to cope with a most unusual problem of late. We have in the vicinity one herd of goats, one herd of antelope, and innumerable pheasants and sage chickens, all of which find it necessary to plant themselves right in the middle of our runways just at the time a flight is due to land or take off. This, of course, necessitates sending one of our agents out on the field to say 'shoo' to the livestock a few minutes prior to each arrival or departure. This operation usually takes at least 10 to 20 minutes of the agent's time, which is most valuable just before flight arrival since this is the period when our passengers check in at the counter and the flight papers are being prepared. The loss of the agent's assistance at the station causes the operation to be slowed down to the extent that a delay results on nearly every flight through Riverton. This gives the Riverton station a reputation which is definitely not good. I humbly request either a high-powered rifle or one more station agent. Either one could relieve the situation." Comments Jerry Kitchen: "He didn't get his man." What about the rifle, Jerry?

UAL Move Separates Traffic and Sales

In a major policy move designed to put increased emphasis on sales, United Air Lines has separated the traffic and sales functions of the company.

Harold Crary, formerly vice president-traffic and sales, becomes vice president-sales and advertising. R. W. Ireland, vice president-administration, is named vice president-traffic administration. Crary's office will be freed for concentration on promotional sales activities, and interline traffic matters will be placed under Ireland.

Liaison between the office of the president and all departments of the company is being transferred from Ireland's office to Otis E. Kline, who became executive assistant to W. A. Patterson, president, on Jan. 1.

Transferred to Ireland's office are the following traffic activities: contacts on rates, practices and ethics among the airlines, representation in the Air Traffic Conference and the International Air Transport Association, relations with foreign airlines, and certain airport negotiations.

1949 Financial Reports

Mid-Continent Airlines announced an unaudited report for the year 1949 indicating a net profit, after taxes, of $313,543, as compared to a net of $104,070 the year before. It was the eighth consecutive year the company had earned a profit. Operating revenues of $7,515,155 were up 8.7% over 1948, while operating expenses were up only 4% from $6,718,062 to $6,983,848.

Delta Air Lines reported an operating profit of $706,867 and a net profit, after taxes, of $450,967 for the calendar year 1949. Each month of the year showed a net profit, March leading with a net of $99,560.

American Airlines reported cargo revenue of $6,180,000 for the year 1949, or an average of more than $500,000 monthly. The 1949 figures represent an increase of 34% over 1948. The company also noted a substantial improvement in business traffic, with holders of air travel plan charge account cards increasing their volume 26% over 1948.

The Flying Tiger Line reported that its 1949 gross revenue exceeded $3,700,000, which was 46% or more than a million dollars over the previous year and nearly 400% above the 1947 revenues. George T. Cussen, vice president-sales, said the company has been in the black on over-all operations for every month since last summer and expects to earn increased profits in 1950.

CAB Map Series: A series of thirty-four sketch maps has been issued by CAB's Foreign Air Transport Division in a supplement to its study "Airlines of Middle America." The maps show the routes operated by each airline in Middle America, together with the point-to-point mileages and frequency of service expressed in round-trips per week, as well as the equipment used. For copies, write Sydney B. Smith, Chief, Foreign Air Transport Division, Bureau of Economic Regulation, Civil Aeronautics Board, Washington 25, D. C.

PEOPLE

ADMINISTRATIVE

R. E. W. Deichler, vice-president sales, American Airlines, has been elected a member of the board of directors of Air Cargo, Inc., replacing **Amos Culbert,** who recently resigned from AA.

Frank Dowd, Charlotte industrialist and banker, has been elected a director of Piedmont Airlines, filling the vacancy created by the death of S. Clay Williams.

Stabley Meyer of New York and California has been elected a director of Colonial Airlines. The resignations of two other directors, **Eugene P. Barry** and **James M. Landis,** have been accepted.

J. V. Dooley has been appointed manager of the cost and budgets branch of American Airlines at Tulsa.

OPERATIONS-MAINTENANCE

Robert Ayer, who joined American Airlines in 1945 from Kaiser-Fleetwings where he was chief engineer during the war years, resigned from the company February 10. During the past three years he has been identified closely with development and flight research on better navigation and traffic control. He was an industry member on the SC-31 Committee.

George Friedrich, former operations manager for Trans World Airline at Gander, has been transferred to Orly Field, Paris, in the same capacity, replacing **W. H. Meinzer.** Meinzer goes to Tunis to replace **R. W. Everett,** who is being reassigned.

James M. Condon, for the past two years assistant superintendent of the airways department of Pan American World Airways Latin American Division, has been promoted to superintendent of that department. He succeeds **W. Frank Godwin,** who has left the company.

Condon

TRAFFIC & SALES

Bert D. Lynn has been appointed director of advertising and public relations for Western Air Lines, replacing **Kenneth E. Allen,** resigned.

John D. Locke has been named special Latin American representative for Chicago and Southern Air Lines. **C. G. Sweazea,** district traffic manager at New Orleans, has been transferred to Havana to succeed Locke as special representative in Cuba.

William Van Dusen, for the past two years counsel on public relations for Pan American World Airways and for many years before that director of public relations, resigned last month to devote full time to general public relations work.

R. W. (Bill) Slater has been promoted to district traffic manager for Continental Air Lines at El Paso, replacing **Don Raish,** resigned. **Dave Savage** takes over Slater's former post as city traffic manager at Pueblo.

John A. Mack has been appointed regional traffic and operations manager for U. S. Airlines at Washington.

William G. McGee has been promoted from superintendent of passenger service to passenger sales manager for Piedmont Airlines.

John B. Andersen, formerly assistant manager of reservations and ticket sales for Capital Airlines, has been appointed sales promotion manager with responsibility for advertising development as well as the company's expending sales promotion program.

Andersen

E. L. Dare, with United Air Lines for 18 years and superintendent of air express for the last four, has been named district cargo sales representative for the San Francisco area.

Samuel Henry, Jr., and **H. G. Riegner** have been named assistant advertising directors for Trans World Airline. Riegner, formerly in charge of advertising on TWA's overseas routes, will now be responsible for all promotional advertising on a system-wide basis, while Henry, formerly in charge of domestic advertising, will handle all media advertising for the domestic and international divisions.

L. H. Kent has resigned as manager of United Air Lines' Hollywood traffic office to enter the artist management field.

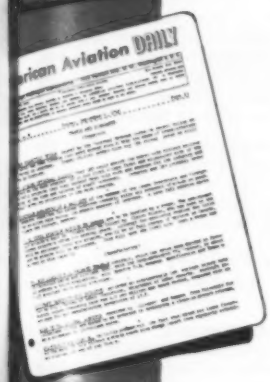
George Alexander, formerly district traffic manager for Northwest Airlines in Tokyo, has been transferred to the company's new traffic office in Osaka in the same capacity.

Mel Anderson has been promoted to sales manager for Trans-Texas Airways. Before joining TTA a year ago, he had been associated with Slick Airways and Braniff Airways in sales promotion work.

George L. Ogg has been promoted to the position of city manager for Trans-Texas Airways in Houston. Other city managers have been named as follows: **Robert W. Schoen** at San Antonio; **James Beck, Jr.,** at El Paso; **Irving Ducoff** at Galveston; **D. Lee Bolin** for Beaumont-Port Arthur-Orange; and **Ralph Hantzsch** in Fort Worth.

Robert P. Hubley, formerly district sales manager for The Flying Tiger Line in San Francisco, has been appointed district sales manager of California Central Airlines.

A Feather in Our Cap!



January 17, 1950

Dear Mr Parrish.

In looking over my books at the close of my first year as an independent aviation consultant, I find that American Aviation Publications, Inc. represents my greatest single expense for the year, except for payrolls. This includes not only subscriptions to all your general publications but also a moderate volume of advertising.

This letter is not written as a complaint, however.

On the contrary, I get more than my money's worth, I am continually impressed by the good journalism that the "Daily" and American Aviation Magazine represent, and by their essentiality for anyone who wishes to keep thoroughly and promptly informed on aviation affairs. The Guide and the Directory are also indispensable. In advertising I find American Aviation most effective in reaching a highly selective market.

Thus, even though I am concerned with costs, this is an enthusiastic fan letter rather than a complaint.

Long may your publications prosper!

Sincerely yours,

Mr. Wayne W. Parrish,
Editor and Publisher
American Aviation Publications
1025 Vermont Avenue, Northwest
Washington 5, D. C.

Signed
(Name on request)

FOR THE *Finest*... LOOK TO...

American Aviation Publications, Inc.

1025 VERMONT AVENUE, N. W., WASHINGTON 5, D. C.

Over the Counter

By Eric Bramley

Passenger Service

WE'RE pleased to see that **Continental Air Lines** is now providing flying parents with disposable bibs for their children. The bib is made of soft gauze material which will absorb food and cereal that a child might drool down his chin. But why not give something similar to all passengers at mealtime? It would be a terrific improvement over the conventional napkin.

Sales Promotion

SOMETHING new and different: **LAMSA Airlines**, Mexican affiliate of **United Air Lines**, is offering a "free husband" plan from Feb. 1 through Mar. 31, under which a husband and wife making a round-trip together between any points on the company's system may travel for the price of one round-trip ticket. Normal 10% discount does not apply. Tickets issued under the plan are valid for 30 days from date of issuance, and those issued during the last day of the plan are good for an additional 30 days.

Northwest Airlines has released a 24-minute 16-mm sound and color film, "Stratoflight to Hawaii" . . . **Braniff Airways** is distributing throughout Latin America a Spanish version of its Inter-American Trade Aid handbook . . . **Capital Airlines** is promoting sales among midwest farmers. It has arranged a special four-day trip to Washington, five of which are planned leaving Chicago Feb. 19, Mar. 5 and 19 and Apr. 2 and 16. Included are a visit to Congress, lunch with Agriculture Department officials, visit to Beltsville experimental farm and tours of Washington, Mount Vernon, Annapolis and Williamsburg.

Railway Express Agency is out with an attractive folder, "When You Ship by Air, First Compare." Interestingly, the covering letter says, "You'll notice that we make no claim for our service as the **only** air shipping service. We simply point out that air express does have certain advantages of speed, convenience and economy. . ."

Traffic, Tariffs and New Services

NORTHWEST Airlines has abandoned a proposal to extend the fare-and-a-tenth round-trip trans-Atlantic excursion fares to its domestic points, effective Feb. 8. It was canceled because "according to various other carriers NWA had misinterpreted and was not in accord with the IATA resolution governing the trans-Atlantic 15-day fares," company said . . . **American Airlines** proposes to change its transcontinental aircoach tariff to permit more liberal baggage allowances for international passengers using the service for part of their trip. Allowances would range from 15 to 48 lbs. higher than the 40-lb. limit for domestic passengers.

United Air Lines has given Oakland, Calif., its first DC-6 coastal service with two new daily flights on the Seattle-Tacoma to Los Angeles route . . . **Braniff Airways** expects to open service to Asuncion, Paraguay, in about four to six weeks . . . **Capital Airlines'** 1949 special flight revenue reached an all-time high of $586,940, an 87% increase over 1948 . . . **Northwest Airlines** and **The Flying Tiger Line** have completed an interline cargo agreement . . . **Pan American and its affiliate, Compania Cubana de Aviacion,** have opened a new ticket office at 23rd and O Sts. in Havana, two blocks from Hotel Nacional. They are retaining the old office at 252 Prado for benefit of downtown patrons.

Delta Air Lines has proposed to CAB an excursion fare (one-third discount) for convention delegates . . . **American Overseas Airlines'** entire service to Europe is now scheduled out of New York International Airport. Last LaGuardia trip was Jan. 9 . . . **United Air Lines** opened California-Hawaii Stratocruiser service Jan. 15, seven round-trips weekly . . . **KLM Royal Dutch Airlines** on Feb. 5 started twice-weekly through Constellation service New York-Rome.

Scandinavian Airlines System will operate nine trans-Atlantic round-trips weekly between May 15 and Oct. 1, all with DC-6's . . . SAS and **United Air Lines** are advertising conducted tours of Scandinavia for the coming summer . . . **American Overseas Airlines'** Stratocruisers started serving Glasgow and Amsterdam on Jan. 10 . . . **Colonial Airlines** was to put DC-4's on the New York-Montreal run on Feb. 1, four round-trips daily . . . **Mid-Continent Airlines** has arranged with **TACA** to participate in the latter's year-round all-expense tours to El Salvador and Guatemala.

All American Airways has added a fourth daily round-trip Pittsburgh- New York . . . **Inland Air Lines** starts service to Spearfish, S. D., on Mar. 1 . . . U. S. **Airlines** has started daily scheduled cargo service Chicago-Miami via Indianapolis and Atlanta . . . **National Airlines** added another Miami-Havana daily round-trip on Feb. 1.

CAB Briefs

Rates & Fares

Western Air Lines has asked Board approval of a reduction in its cargo charter rate for DC-3 (passenger-type) equipment from 85c to 65c per mile, effective March 8.

Central Airlines has asked CAB approval of a 15% reduction in fares on its Texas-Oklahoma feeder system to permit it to "realize a maximum amount of traffic." New basic fare level would be 5.2c per mile for Central's service with single-engine equipment, as against an average fare of 6.1c for competing trunk carriers. Central told the Board its equipment, elapsed time differences and route characteristics now so heavily favor competitive lines that the reduction would not create "any undesirable competitive situations."

An investigation has been ordered of **Trans-Texas Airways'** proposal to expand the half-fare family plan benefits to all days of the week except Friday. Normally the plan applied only to travel on Monday, Tuesday and Wednesday. **Braniff** and **Eastern** filed protests against the proposal and the tariff was suspended for 90 days pending investigation.

Route Cases

At the request of **Pan American World Airways, Pan American-Grace Airways** and **National Airlines**, CAB has again postponed the resumption of hearings in the National Airlines Dismemberment Case. New date is March 6.

Northwest Airlines has filed an application for temporary suspension of service at Eau Claire, Wausau and Green Bay, all in Wisconsin and all currently being served by **Wisconsin Central Airlines.** NWA said it would restore service if Wisconsin Central's feeder permit should not be renewed at some future date.

Golden North Airways, a large irregular air carrier, has applied to CAB for a certificate or exemption order which would permit scheduled "second-class" operations between Portland, Ore., and points in Alaska. Proposed routes are between Portland and Fairbanks direct and between Portland and Anchorage direct, with Seattle and Juneau as optional intermediates.

The Board has approved issuance of a foreign air carrier permit to **British West Indian Airways Ltd.,** subject to Presidential approval, authorizing services between Trinidad, B.W.I., and Miami, via the intermediate points of Barbados, Antigua and St. Kitts, B.W.I; San Juan, Puerto Rico; Ciudad Trujillo, Dominican Republic; Port-Au-Prince, Haiti; and Kingston and Montego Bay, Jamaica. The Board held the proposed service would not have a serious diversionary impact on Eastern Air Lines' Miami-San Juan service.

Examiner James S. Keith has recommended, subject to certain conditions, approval of the merger of **Monarch Air Lines** and **Arizona Airways,** and extension of Monarch's route from Gallup, N. M. to Winslow, Ariz.

Here Today . . . Fun Tomorrow
And Luxury all the way

aboard

El Conquistador

Yes, tomorrow can be fun in a far-away place with the lilting music of a foreign language tinkling in your ears. Tomorrow you can be in Cuba, Panama, Peru or Brazil. Sunning . . . shopping . . . celebrating. And today, while you fly aboard El Conquistador, you'll enjoy air travel at its Braniff best. Comfort and relaxation . . . a spacious berth for a night's sleep above the clouds. Meals complete with aperitif and hors d'oeuvres. For information about El Conquistador call Braniff office or travel agent.

HAVANA — Gay, fun-loving capital of Cuba...holiday isle of the tropics. Enjoy its beautiful beaches, historic shrines, luxury hotels, leisurely Latin charm — only hours away by Braniff's El Conquistador.

PANAMA—Crossroads of the world—colorful, exciting, international. Renowned for quaint old-world shops, deep-sea fishing, historic buildings and churches. See Panama on your Braniff flight to South America.

LIMA—Majestic "City of Kings"... in the land of the Incas. A beautiful, modern city where springtime reigns eternal—rich with the romance of its mysterious past. Less than a day away by Braniff's El Conquistador.

RIO DE JANEIRO—"Paris of the New World," famed for its Copacabana Beach, Sugar Loaf, smart shops, exciting night life. A glorious city at the end of a glorious nonstop flight across the heart of South America ...aboard Braniff's El Conquistador.

EL CONQUISTADOR—Your fastest, most luxurious flight to South America... Braniff DC-6 luxury service all the way. Also, El Intercontinental, low-cost air coach service—at 25% below regular air fares.

BRANIFF
International AIRWAYS

Dallas, Chicago, New York, San Francisco, Los Angeles, Detroit and 38 other principal cities in the Americas.

The Birdmen's Perch

Plane efficiency—*plane efficiency!* As long as it remains one of the vital ingredients in lightplane flying, those words will always sound like a soft sigh from Lana Turner.

The late Bill Odom proved the importance of *plane efficiency* on his record-breaking lightplane flight from Honolulu to Teterboro, N. J.

Pre-flight studies supplied Bill with all kinds of important data and you can bet, before taking off he checked everything as carefully as a chorus girl ogling a new mink coat.

Of course, Bill was using the data to establish maximum range cruising conditions, but the same info can be used to give the best setting for maximum endurance, maximum speed for a specified fuel supply, and so on.

Yep—whether you're going to hop the continent or just take in the bathing beauties at the beach, it will pay you (in more efficient and economical operation) to spend a few hours pre-flighting your ship to discover the *facts!*

AND, BY JEEPERS . . .

Speaking of economical, efficient operation, if you're one of those guys who needs an overhaul job every time you fly down to the corner grocery, Gulfpride Aviation Oil—Series D—is the answer!

It's the world's finest detergent dispersant oil for horizontally opposed engines—the only aviation oil put through Gulf's exclusive Alchlor process to remove extra carbon and sludge formers.

Gulfpride Aviation Oil—Series D—will increase the periods between overhauls up to 100% by keeping valves and rings free *longer!*

LITTLE KNOWN FACTS DEPT.

So you're sitting there minding your own business when a big tycoon from Cincy comes looking for a zoot pilot to fly him and his beautiful daughter to Bermuda.

You can smell that "long green," the daughter is a gorgeous hunk of stuff, everything's rosy when—whammy! "Where's your Perch Pilot's license?" he says.

So—you haven't got one! Too bad, but the affluent gentleman can contact United Airlines Captain Leo Kriloff of Burlingame, Cal. His L.K.F. (with proof) entitles him to the honorable Commission of Perch Pilot (br)—that's "Bottom Rung" in Ubangi. Your Commission's on the way, Leo.

Leo says: "*Believe it or not, United Air Lines' Valley Queen, between Los Angeles and San Francisco, makes better time with a headwind. That's because all airfields between the cities are laid out north and south. With a headwind there's no need to waste time circling for a landing!*"

Don't remain unsung forever. Send your Little Known Fact About Well Known Planes—with proof—to this address:

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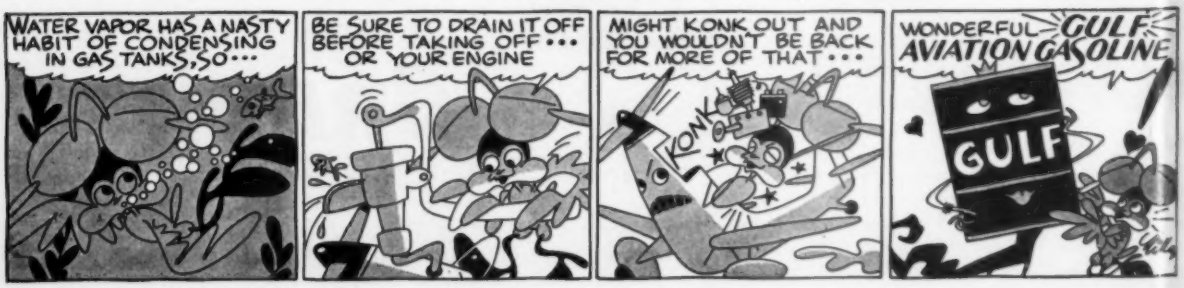
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BE SURE TO DRAIN IT OFF BEFORE TAKING OFF ··· OR YOUR ENGINE
MIGHT KONK OUT AND YOU WOULDN'T BE BACK FOR MORE OF THAT ···
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AIRPORTS
Including Features Formerly in AIRPORTS AND AIR CARRIERS Magazine

Coast-to-Coast Selling:

Out-of-Town Promotion Attracts Transient Flyers

By Fred S. Hunter

Catering to transients would appear to be a business policy which has the disadvantage of wide seasonal fluctuations in revenues for the operator of an air strip.

But Central Airport in Compton, Calif., seven miles southeast of Los Angeles, specializes in it, and ranks as one of the more successful private airport operations on the West Coast.

It is true Central Airport has certain geographical and climatic advantages. Moreover, it can, and does, advertise itself as a western terminus of Skyway No. 1. But the principal reason Central Airport gets more than its share of transients flying into the Los Angeles area (gets 80%, one competitor grumbles) is the aggressiveness of its owner and operator, E. G. "Slim" Kidwell, in going after the business.

Catering to transients takes Kidwell far afield and his sphere of promotion thus becomes virtually nation-wide. There are 151 enroute-to-Los Angeles airports on Kidwell's list as possible generators of transient business for Central Airport. Kidwell—a great believer in the direct approach—has made 'em all, most of them several times.

Generates Business

"The place to get airport business is at other airports," declared Kidwell.

That's why at an airport deep in the heart of Texas—or only a few miles away within California—you may run across a pamphlet with an up-to-date list of current events in Los Angeles. If a pilot is looking for an excuse for a trip Kidwell wants him to have it. The pamphlet naturally tips off the pilot that Central Airport is a good place to put up.

"Your home away from home" is the theme Kidwell keeps repeating on the brochures he gets out. These brochures are more than mere descriptive pieces about Central Airport. They provide useful information to the private pilot.

The latest example contains helpful hints on the use of aircraft radio and for illustration includes a full outline of radio communications procedures for a pilot on an imaginary trip from Central Airport to San Francisco. It carries also the radio range frequencies of routes leading to Los Angeles, a copy of the phonetic alphabet, the meaning of light signals used by control towers and flight plan information. Briefly, it is a document many pilots will keep for reference, as well as a brochure advertising Central Airport.

Vacation Transients

Last summer Kidwell registered more summer vacation transients who stayed around for a week, two weeks or a month looking over the California scenery than he ever had before, and he expects to top that record this coming season. This patronage goes a long way in making up for the decline in tiedowns—from a boomtime 205 down to 115—and the shrinkage in gas sales—from a high of 1,000 gallons a day to 500 gallons a day—experienced by all private airports, since it increases the volume of other airport revenues.

These latter sources of income include a restaurant, which attracts a good neighborhood patronage; a cocktail lounge where a flyer in from a cross-country can relax over a drink; a motel with five apartments where visiting pilots can stay overnight or a week, and a unique rental car service.

Car Service

Kidwell has his own automobiles which he keeps at the airport so that a transient not only has transportation immediately available but doesn't have to go through the red tape of arranging for a car from a rental service.

The Strato-Diner, the Strato-Bar and the Strato-Sleeper, which Kidwell calls his cafe, cocktail lounge and motel, led to the organization of the Strato-Flyer Club of Central Airport and gave Kidwell the opportunity to pass out membership cards, which, of course, keep reminding holders of Central Airport.

Another Central Airport touch is a

Boston Skydeck—This observation deck atop the new apron building at Logan International Airport, Boston, is expected to attract large crowds of spectators this spring and summer, after airline operations, now centered at a temporary building across the field, are moved into the apron structure. It was originally planned to build a modern terminal building adjacent to this apron building but to date funds have not been made available. As a result the apron building will probably be used for terminal facilities until the new construction is possible.

Airport News Digest

• **The Airport Advisory Committee** meetings in Los Angeles late last month were so successful that the group now plans four meetings a year instead of two. CAA Administrator Del Rentzel took personal interest in the meetings and attended them all. CAA is giving real encouragement to the committee so that it can assume important policy role for commercial aviation. One incident which apparently miffed some of the committee members was the cocktail party given by the Aircraft Industries Association. Not a single aircraft company president put in an appearance and only AiResearch and Lockheed were well represented. Committee members had hoped to meet and talk with manufacturing bigwigs. One member was so burned up he wanted to pay for the party himself.

• **Omaha Municipal Airport expects** to get $20,000 to $30,000 in additional revenues from its new 1950 leases, under which operators pay the city half of all tie-down fees collected and handle all gasoline sales on the field, paying the city 3c a gallon plus 5c a quart on oil sales.

• **Chicago officials have OK'd** a shift of $2,500,000 of airport improvement bond funds from a "closed" account to an open one, so that the money previously earmarked only for development of O'Hare International Airport, may be used for the proposed extension of runways at Meigs Field, the downtown airport on Northerly Island. Improvements will enable the lakefront field to accommodate transport type planes.

• **Control and administration** of the present Allegheny County Airport and the new Greater Pittsburgh Airport would be placed under a new County Airport Authority under a plan being discussed. The proposed Authority would issue bonds sufficient to cover past and future expenditures of county funds for construction of the two fields and to finance additional construction where necessary.

• **An advanced Gilfillan surveillance** radar system will soon replace the mobile ground control approach (GCA) radar installation used at La Guardia Airport since 1947. New unit has a 60-mile range. Similar installations are scheduled at Washington, Newark, Philadelphia and Boston in the near future.

• **Improvements to cost from $800,000** to $1,000,000 at Lambert-St. Louis Municipal Airport have been approved by the city airport body, and work will be started next summer. High-intensity lighting, relocation of the tower and replacement of deteriorated asphalt taxiways with concrete strips are major items.

• **The City of San Francisco has been** awarded a refund of $185,361 in taxes paid to San Mateo county, under protest, on filled land it added to its international airport. The court, overruling a lower court verdict from which the city had appealed, held that such artificially created land should be called as "improvements" and not taxed under a state law that forbids taxation of improvements to any property which a city may own in another county. County officials are threatening to continue the fight in the courts.

• **The city-county airport zoning board** at Fort Worth has set up an air hazard area covering a radius of two and one-half miles from the center of the Municipal Air port, and has restricted structures in the area to a height of 830 feet above sea level. New ruling will not only apply to existing structures but will prohibit non-conforming construction in the future.

• **The New Orleans Airport Commission** has definitely decided to expand the present New Orleans Airport at a cost of $5 million, to be borne by the state and federal governments. Improvements will include the filling of an additional 183 acres of submarginal land along the lake shore and extension of a 4,000-foot runway to 7,000 feet. The airport has been used by private and military planes since the opening of the larger Moisant International Airport in 1946.

• **The California Airport Executives Association** is conducting a survey to determine how much space at California airport terminals is occupied rent-free by federal agencies, and how much is paid for at established rates. The survey is expected to be used in a petition to the government asking for a new rental formula so that airports will get a greater return on space used by federal agencies outside of the CAA, Weather Bureau and others rendering vital services.

reservations service. Whether it is a hotel, seats for a show or sports event, or tickets to your favorite broadcast, Central Airport's reservation service is at your service.

Kidwell takes an active interest in civic and industry affairs and in the latter category he's an especially active worker. He belongs to both the Compton Chamber of Commerce and the Los Angeles Chamber of Commerce. Currently, he is spear-heading a movement to make non-revenue producing portions of private airports tax free.

Kidwell allocates $600 a month to pay the property taxes on his 70-acre airport. This tax drain plus increasing land values is the reason so many private airports have fallen into the hands of the sub-divider. Kidwell admits the reason he hangs onto Central Airport instead of walking away from it with a big real estate profit is he likes the business.

Public Service

"In reality the privately owned airport is a municipal airport in the services it furnishes," said Kidwell. "My Central Airport, for example, is a municipal airport for Compton. It costs the taxpayers nothing to have this service. But it will cost Compton a lot of money to build a new municipal airport to replace mine if I should decide to subdivide.

"The state highway department is paying $1,500,000 a mile today to cut through a new freeway where the cost would have been a fraction if it had been planned when it should have been. The same thing is going to happen with airports. It is going to cost the taxpayers millions one of these days to replace the private airports they are letting go out of business."

Central Airport has lights and it operates a control tower with both VHF and medium frequencies from noon until an hour after sundown. This is because Kidwell found pilots of business and personal executive planes prefer radio controlled airports. Why an hour after sundown? There is practically no twilight in Southern California and newcomers often undershoot an ETA on a westbound flight.

"Slim" Kidwell has been operating airports in the Los Angeles area since 1926. He built Central Airport with its 3,200-ft. paved runway 10 years ago, converting 70 acres from a 160-acre alfalfa field. The remainder of the acreage he sold off to help amortize the property.

The field has six hangars which have about 300,000 sq. ft. of floor space; fully equipped aircraft and engine repair shops, a flight school and charter service, these being leased out to individual operators. The airport also is headquarters for two widely known used plane dealers, Al Lary and John Overall.

Doolin, Hyde Join CAA Airport Group

Two new members attended the CAA's Airports Advisory Committee meetings in Los Angeles last month for the first time, one representing small airports and one representing terminal airports.

Arthur C. Hyde, owner and operator of Congressional Airport at Washington and Hyde Field, Clinton, Md., joined the committee as a replacement for Dr. James E. Mooney, who before joining CAA last month was director of aeronautics at St. Petersburg, Fla. B. M. (Mike) Doolin, director of airports for San Francisco, came on the committee to replace J. P. Doyle, of Portland, Ore.

Other committee members are:

A. B. Curry, director, Dade County Port Authority, Miami, chairman; Hervey F. Law, chief of operations, Port of New York Authority; Clarence Young, director of aviation, Los Angeles; Drennon Albrecht, manager of Memphis, Tenn., airport; Carl J. Amundson, manager of Grand Forks, N. D., airport; John H. Burke, manager, Wiley Post Airport, Oklahoma City; Walter Betsworth, manager, Waterloo, Ia., airport; Don Martin, manager, Wilmington, Del., airport; John Berry, manager, Cleveland Municipal Airport; and Louis Inwood, director of aviation, Kansas City, Mo.

Airport People

Percy A. Johnson, formerly vice president and general manager of the O. K. Union Co. in Vernon, Calif., an affiliate of Grand Central Airport Co., Glendale, has gone to the home office as executive vice president and general manager. Grand Central's former executive vice president, **Maj. Robert O. Denny,** moved up to the presidency, and **Maj. C. C. Moseley,** former president, is now chairman of the board.

Daniel E. Anderson has been appointed public relations director for the Los Angeles Department of Airports. He was with the Aeronautical Chamber of Commerce in Los Angeles before the war and during the war years was director of information for the Aircraft War Production Council on the west coast.

Clark Kee, who returned recently from Bangkok, Siam, where he was in charge of airport construction, has been appointed consulting engineer for the Hawaiian Aeronautics Commission . . . The name of Pittsburgh-Butler Air Base has been officially changed to Graham Field in honor of **William J. Graham,** Pittsburgh aviation enthusiast and owner of the airport since 1945.

George S. Martin, who recently bought the Robinson Flying Service at Sikeston, Mo., has been named airport manager by the city . . . **Harry T. Resch,** formerly operator of the airport at St. Francis, Kansas, is the new lessee of the Meade, Kansas, Airport.

UP

WHO . . . You!

WHAT . . . Airwork overhauled Pratt & Whitney engines and complete line of accessories.

WHERE . . . In the air — Airwork overhauled engines are flying more hours **UP,** making money for their operators and owners.

WHEN . . . At any time—you can rely on Airwork overhauled engines for dependable performance.

WHY . . . Careful workmanship on overhauls has enabled operators to get time extensions of as much as 55% on operating time allowed by CAA between overhauls.

HOW . . . By teamwork — Airwork has established a precision production line overhaul shop, which assures utmost quality at lowest cost!

For your overhaul requirements

"Send it to Airwork"

Airwork Corporation distributes the following aviation products: American Brass, Bendix, BG, Champion, Continental, Jack & Heintz, Packard Cable, Pesco, Pratt & Whitney, Romec Pumps, Thompson Products, Titeflex, Turco Products, and U.S. Rubber.

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Aviation Insurance Firm Opens Office at WNA

Parker & Co., aviation insurance firm of Philadelphia and New York, has opened an office at Washington National Airport. Others probably will be opened later this year at Los Angeles, San Francisco and Miami. Parker & Co. caters to international air travelers and to domestic travelers who want more extensive insurance coverage than is provided in the policy-issuing machines at airports.

Instead of the $25,000 limit on machine policies, Parker issues policies up to $100,000. It also offers an all-accident type of policy, and an annual policy for frequent users of air travel. All its air travel policies cover travel to and from airports and include $250 in medical expenses for injuries in addition to the usual survivor benefits.

CAA Handbook: The 1949 edition of the CAA Statistical Handbook of Civil Aviation, covering all available U. S. civil aviation statistics through fiscal 1949, is now available from the U. S. Government Printing Office, Washington 25, D. C., for 50 cents. The new handbook, comprising nine chapters and 127 pages, contains an expanded 14 page chapter on international scheduled air carrier operations, in addition to the usual data on the CAA and its functions, airports, aviation education, civil flying, aeronautical production and exports, scheduled domestic air carrier operations, and aircraft accidents.

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Unused Federal Aid Funds Reapportioned

A sum of $2,684,069, most of which will go to comparatively few big-city airports, has been lost to the states in a reapportionment of unexpended allocations under the Federal-aid airport program.

Apportionments to the 48 states for the three fiscal years of 1947-1948-1949 totaled $79,947,750, of which amount $10,736,278 remained unobligated as of January 23, deadline for spending the money under an amendment to the Airport Act passed last October.

Twenty-five per cent of this unobligated balance went into the discretionary fund, as required by law, and the remaining 75% was redistributed among the states on a basis of area and population.

	State Apportionment Fiscal 1947-48-49	Unobligated Balance	State Share of Redistributed 75%	Changes	Adjusted 1947-48-49 State Apportionment
Region I					
Connecticut	$ 590,967	$ 330,617	$ 59,521	$— 271,096	$ 319,871
Delaware	111,979	71,079	11,278	— 59,801	52,178
Dist. of Col.	202,200	202,200	20,365	— 181,835	20,365
Maine	700,187	480,256	70,522	— 409,734	290,453
Maryland	711,727	.....	71,684	+ 71,684	783,411
Massachusetts	1,429,490	.....	143,976	+ 143,976	1,573,466
New Hampshire	269,323	148,734	27,126	— 121,608	147,715
New Jersey	1,369,103	.....	137,894	+ 137,894	1,506,997
New York	4,788,603	.....	482,300	+ 482,300	5,270,903
Pennsylvania	3,600,288	.....	362,615	+ 362,615	3,962,903
Rhode Island	232,418	232,418	23,409	— 209,009	23,409
Vermont	233,096	.....	23,477	+ 23,477	256,573
Virginia	1,359,311	.....	136,908	+ 136,908	1,496,219
West Virginia	889,563	.....	89,595	+ 89,595	979,158
TOTAL	16,488,255	1,465,304	1,660,670	+ 195,366	16,683,621
Region II					
Alabama	1,533,482	680,729	154,450	— 526,279	1,007,203
Florida	1,354,349	.....	136,408	+ 136,408	1,490,757
Georgia	1,708,952	.....	172,123	+ 172,123	1,881,075
Mississippi	1,286,097	857,050	129,534	— 727,516	558,581
North Carolina	1,764,743	1,220,888	177,742	—1,043,146	721,597
South Carolina	979,417	657,346	98,645	— 558,701	420,716
Tennessee	1,430,555	.....	144,083	+ 144,083	1,574,638
TOTAL	10,057,595	3,416,013	1,012,985	—2,403,028	7,654,567
Region III					
Illinois	3,145,274	.....	316,787	+ 316,787	3,462,061
Indiana	1,512,053	.....	152,292	+ 152,292	1,664,345
Kentucky	1,385,346	70,032	139,530	+ 69,498	1,454,844
Michigan	2,845,127	.....	286,557	+ 286,557	3,131,684
Minnesota	1,961,453	.....	197,554	+ 197,554	2,159,007
North Dakota	1,107,053	823,800	111,501	— 712,299	394,754
Ohio	2,673,835	.....	269,304	+ 269,304	2,943,139
Wisconsin	1,807,286	.....	182,027	+ 182,207	1,989,313
TOTAL	16,437,427	893,832	1,655,552	+ 761,720	17,199,147
Region IV					
Arkansas	1,277,278	.....	128,645	+ 128,645	1,405,923
Louisiana	1,357,123	.....	136,687	+ 136,687	1,493,810
New Mexico	1,731,961	1,047,453	174,440	— 873,013	858,948
Oklahoma	1,611,864	.....	162,344	+ 162,344	1,774,208
Texas	5,398,486	.....	543,727	+ 543,727	5,942,213
TOTAL	11,376,712	1,047,453	1,145,843	+ 98,390	11,475,102
Region V					
Colorado	1,686,680	393,548	169,880	— 223,668	1,463,012
Iowa	1,497,081	.....	150,784	+ 150,784	1,647,865
Kansas	1,608,825	70,930	162,038	+ 91,108	1,699,933
Missouri	2,048,372	.....	206,309	+ 206,309	2,254,681
Nebraska	1,396,479	.....	140,651	+ 140,651	1,537,130
South Dakota	1,189,746	215,338	119,829	— 95,509	1,094,237
Wyoming	1,340,029	1,217,267	134,966	—1,082,301	257,728
TOTAL	10,767,212	1,897,083	1,084,457	— 812,626	9,954,586
Region VI					
Arizona	1,621,948	.....	163,360	+ 163,360	1,785,308
California	4,146,387	.....	417,617	+ 417,617	4,564,004
Nevada	1,460,355	309,935	147,085	— 162,850	1,297,505
Utah	1,263,194	.....	127,227	+ 127,227	1,390,421
TOTAL	8,491,884	309,935	855,289	+ 545,354	9,037,238
Region VII					
Idaho	1,237,928	264,852	124,682	— 140,170	1,097,758
Montana	2,069,153	1,441,806	208,402	—1,233,404	835,749
Oregon	1,583,303	.....	159,468	+ 159,468	1,742,771
Washington	1,438,281	.....	144,861	+ 144,861	1,583,142
TOTAL	6,328,665	1,706,658	637,413	—1,609,245	5,259,420
U. S. TOTALS	$79,947,750	$10,736,278	$ 8,052,200	$—2,684,069	$77,263,681

Plane Owners to Test New Lear Lightplane Autopilot

By B. J. WARD

Ten owners of light planes soon will have the opportunity to test a lightplane autopilot, the first of its type to be introduced. The prototype autopilots are under construction by Lear, Inc., Grand Rapids, Mich., and will be turned over to selected lightplane operators to run up service experience.

Bill Lear, founder of Lear, Inc., made a survey of operators of planes in the Bonanza and Navion class and found that they are willing to pay approximately $2,000 for a reliable autopilot of light weight. This is the estimated price of the Lear autopilot and, while too high for the mass market, Lear believes its utility will justify its cost for the business aircraft.

He says, "The thing that is holding back aviation for the business pilot is the need for that constant two ounces of pressure on the wheel. In cross-country flight, no matter how much inherent stability is built into a plane, the plane will require trimming as the pilot shifts his weight or as it encounters air currents.

"What we need is an autopilot to hold the plane straight and level and take the cross country labor off the pilot so that he will arrive fresh enough for a business conference."

Two in Service

Two such lightplane autopilots are already in service and are proving satisfactory. One, installed in a plane of Butler Company, Washington, D. C., has been in constant use for two years and has yet to require servicing.

Indications are that the lightplane autopilots now under construction will weigh about 25 pounds complete. However, this will not all be new weight as, in the class of plane for which the unit is designed, some weight now present in instruments will be replaced by the autopilot instruments. This is true of the directional gyro. The autopilot is an electrical unit providing automatic flight operation on the three major axes of the plane by operating aileron, rudder and elevator surfaces.

Gyros are used to initiate instructions which are relayed through an amplifier to the electric motor or servo which is connected into the control system. As the plane leaves the attitude for which the autopilot is set, the gyro senses the change and an electric impulse from the gyro is converted by the servo into movement of the plane's control surfaces.

One of the main features of the Lear autopilot is the light-weight amplifier which receives the basic signal from the flight gyro and builds the signal up to a strength capable of operating the servo motors. The simple design of the mechanism and the light load carried by the servo motor make it possible to use only one tube in each amplifier system. However, the outstanding thing about the amplifier system, Lear says, is that it transmits torque in proportion to the amount of current supplied to the servo.

Pilot Can Over-Ride

The servo, or electric motor, is unusually light and incorporates a clutch mechanism which allows the pilot to overpower the autopilot. This provision has been made as Lear believes that, in an emergency, a pilot's first reaction is to reach for the control stick. The system also has the usual on-off button which is immediately effective in cutting in the autopilot or turning it off. As with the gyro, there must be a servo for each control surface system.

In using the autopilot, the only action required of the pilot after setting up the aircraft on the desired heading and attitude will be that of adjusting the throttle to maintain the desired airspeed or cross country setting. Lear believes that airspeed control is best left in the hands of the pilot since it requires little attention and eliminates much weight and complexity in the system.

When the autopilot is used for cross-country flying to home in on ranges in conjunction with the Omnimatic equipment, which gives a direction reading to the omni station to which it is tuned, cross country flying will be greatly simplified.

Automatic Flight Minimums

Lear foresees the day when CAA will establish weather minimums for light planes equipped with autopilots which will be between the present minimum for contact and instrument flight.

Somewhere in this range, he says, there will be a point where a pilot not certificated for instrument flight will still be able to operate safely if the plane is equipped for automatic flight. This assumption is based on the increase in time available to the pilot for navigation, communications and problems of marginal weather which a dependable autopilot will give.

In July, Lear will start deliveries to the Air Force of the F-5 autopilot for use in jet aircraft. This is a 52-pound autopilot which incorporates the major elements which ultimately will be used in the Lear personal plane autopilot. About 3,800 hours have already been logged with prototype models of this unit, which includes a directional indicator and an approach control coupler for homing on the ILS glide path. With it, planes can be brought within ten feet of the runway before cutting out the autopilot and approach coupler to take over manually.

'49 Personal Plane Output Half of Previous Year

Personal aircraft shipped in 1949 total 3,358 with a value of $14,322,000, the Personal Aircraft Council, Aircraft Industries Association, reports. Of these 2,328 were four-place planes, 957 were two-place planes and 73 were one-place planes.

Comparison with 1948 figures shows that the number of personal planes

Neat NARCO Panel—This is the special panel designed by National Aeronautical Corp. for Beechcraft Bonanzas. It consolidates all related NARCO controls and instrumentation except the left-right meter. Note that provisions are made for both phase and tone type ILS reception. Panels and control knobs are finished to match the airplane instrument panel.

LOCAL OPERATIONS

shipped in 1949 dropped about 50% from the 1948 level. In 1948, personal aircraft shipments totaled 7,050 aircraft valued at $28,245,000 and included 3,646 four-place and 3,404 two-place planes.

The following table shows 1948 and 1949 shipments by manufacturer:

	Personal Plane Shipments	
	1949	1948
Aeronca	311	599
Beech (Bonanza)	298	678
Bellanca (Cruisair)	27	49
Cessna	857	1,631
Engineering & Research	53	152
Mooney	73	...
Fairchild (F-24)	...	81
Luscombe	157	716
Piper	1,278	1,479
Stinson (Voyager)	...	801
Republic (Seabee)	...	24
Ryan (Navion)	215	483
Taylorcraft	37	105
Texas Engineering (Swift)	52	252
TOTAL	3,358	7,050

CAA Specification Changes

BT-13 Vultee is approved for optional installation of Pratt and Whitney engine Model R-1340 AN-1, by Specification No. A-2-571.

Fairchild M-62 or PT-19 is approved for equipment with skis, if the propeller clearance meets the required nine inch ground clearance, of Federal type SC-4, A-2500, A-2500A, A-3500 and A-3500A, by Specification No. A-724.

Cessna 120 is approved for addition of skis of Federal type A-1500A, A-1850, A-2000, A-2000A and CA1850-6, by Specification A-768.

Fairchild 24 is approved for addition of skis of Federal type SC-4B, A-3500, and A-3500A, by Specification A-707.

Cessna 190 and 195 are approved for installation of two 50.5 gallon fuel tanks in the wings and for winterization equipment, by Specification A-790.

Taylorcraft BC series have been approved for use of the McCauley model 1A90 propeller, by Specification A-696.

Cessna 170 has been approved for equipment with the Koppers Aeromatic F200-H/00-74E propeller, by Specification No. A-799.

B-35 Beech Bonanza is authorized for installation of Continental engine E-185-8 with Serial No. 5122D and above, takeoff rating 196 hp, by Specification No. A-777.

Ercoupe is authorized for installation of McCauley propeller 1A90 (Model 415-D with C-75 engine), by Specification No. A-787.

New Magneto Series

A new series of four and six-cylinder high-tension aircraft magnetos has been introduced by the Scintilla Magneto Division of Bendix Aviation Corp. The magnetos are available with or without impulse couplings and feature improved breaker and cam assemblies with platinum points, improved high and low-speed performance and other features normally found only in higher-powered engine installations.

For Local Operators

Fixed Base Census

CAA is considering dropping its proposed census of fixed base operators. The questions to be asked have been compiled from CAA's various branches and divisions but, in typical government fashion, they add up to six thick pages. In doubt as to whether fixed base operators will take kindly to such an inquisition, CAA now is trying to decide whether to eliminate some questions or to eliminate the census entirely.

"If we get all this information," one CAA official states, "we don't have the people to break it down and tabulate it, so it won't be useful anyhow."

We would hate to see the census dropped. The fixed base operator business has been in such a flux that no one knows how many people are in the business, where the business is overexpanded or even where the business is. CAA should boil the questions down to one page and get the survey going.

The Aircraft Owners and Pilots Association has offered to print the census if it doesn't run more than two pages, and the National Association of State Aviation Officials has offered to distribute it—all of which should give CAA incentive to keep it brief.

Lightplane Maintenance

The first Personal Aircraft Maintenance and Service meeting between lightplane manufacturers and members of the CAA Aircraft Division was to be held in Kansas City, Mo., February 13 and 14. While Air Transport Association's Engineering and Maintenance Conference is an accepted annual affair for the airlines, this meeting sponsored by the Aircraft Industries Association is the first of its kind in the personal aircraft field.

One item on the agenda is consideration of eliminating the annual inspection now required for all planes. Owners of light planes would then have only the 100 hour inspections to comply with and, since CAA figures show that light planes average about 60 hours a year, inspections would come due approximately every year and a half.

Another item to be ironed out is that of inspection procedures. If manufacturers assume responsibility for certifying the airworthiness of their aircraft, CAA regional representatives will lose the authority to approve modifications in the field. A Personal Aircraft Inspection Handbook is being made.

Piper Shake-Up Underway

The sudden resignation of A. C. Esenwein as executive v.p. and general manager of **Piper Aircraft Corp.** is believed to be only the first of several changes coming in top management. Bill Piper is back in control of the company, after a realignment of his directors, and there'll be some changes made. It's a good bet not to look for production of the Baumann Brigadier, which the company took over last year. Piper, himself, favors sticking to the smaller, fabric type line that has sustained him through the years, and his view should prevail now.

Piper is confident of the immediate future, and so are **Beech Aircraft Corp.** officials. Walter Beech has reported backlog of 100 firm orders with deposits for new model B-35 Bonanza. Production for first couple of months of 1950 is said to be pegged at 1.5 units daily, moving up to 2 per day in March.

Servicing Business Planes

Richard E. Fell, general manager of Butler Co. at Washington National Airport and former vice president of Capital Airlines, believes that sales and service of business aircraft is a coming field. "This type of operation has the greatest potential in the aviation business for operating on a sound basis and making money. We have 35 to 40 planes in a day, everything from Navions and Bonanzas to DC-3's. Eventually we hope to open a chain of service bases."

Butler services Coast Guard and MATS scheduled planes, runs the airport operations office, maintains two station wagons for shuttling transient personnel to and from their aircraft, and has ramps for different type aircraft, fire bottles and gas trucks available on 24-hour service.

Beacons—From Airways to Airports

At the urging of the National Association of State Aviation Officials, the Civil Aeronautics Administration has agreed to make available to small airports the rotating airways beacons which radio range stations and other navigational aids have made obsolete.

These lights, originally installed along the airways to guide pilots flying the mail, are now being decommissioned, and CAA has a couple of hundred of them stored in warehouses with no plans for their future use. NASAO officials thought they would constitute a useful minimum navigational aid for local operators having no lighting whatsoever, and CAA officials agreed that the plan should increase utility of lightplanes for night flying.

Cost of "double-ending" or converting the lights from airway to airport beacons, will be only about $100 each.

* * *

• **How to plan an air fair** is the subject of a CAA booklet to be published in about a month. The booklet plugs educational air fairs as against the old fashioned "Will he cream himself?" air shows. It will have information on how to plan committee functions, arrange ground exhibits of aviation manufacturers' items, enlist the cooperation of civic groups, set up public address systems, rope off danger areas, plan demonstrations of the usefulness of planes, and arrange for public viewing of military planes and airliners.

• **To all you National Aviation Trades Association** members, Charlie Parker, your new Washington executive director, is now located in Room 1128 in the DuPont Circle Building in Washington, telephone number DE 8949. Charlie is getting out 4,500 letters to operators all over the country, NATA members and others, in an effort to weld them together into an effective group.

• **Florida's Department of Aeronautics** has proposed a reciprocal good will light plane flight between Florida and California, to originate in either state in alternate years. The two all-weather states want to promote flying and increase the use of Skyways routes, bringing welcome business to local operators along the way.

• **L. L. Schroeder, Minnesota commissioner of aeronautics,** expressed the belief in his anual report to the Governor, that in Minnesota "the aviation outlook for 1950 is brighter than it has been for any year since the war." He estimated that GI flight training in Minnesota in 1949 was off between 60% and 70%, but total flight activity, based on aviation gasoline consumption, dropped only 16%.

—B. J. WARD

U. S. Domestic Airline Revenues & Expenses for November

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
American	$ 7,846,176	$ 6,534,771	$ 436,605	$ 169,637	$ 587,865	$ 70,101	$ 17,206	$ 7,994,631	$ 4,061,248	$ 3,933,383	$ -148,454
Braniff	1,238,777	953,446	200,520	24,970	26,516	8,316	18,801	1,169,981	567,182	602,799	68,797
Capital	2,341,516	1,499,059	499,960	62,855	147,800	7,631	98,058	2,271,926	1,111,548	1,160,378	69,591
Caribbean	50,406	31,638	14,539	. . . .	2,204	190	823	73,564	39,034	34,530	-23,158
C & S	711,877	514,892	156,481	10,247	15,754	6,003	6,232	700,763	317,660	383,103	11,114
Colonial	321,625	208,786	103,526	3,519	3,403	1,137	810	333,784	155,081	178,703	-12,159
Continental	408,965	266,461	110,209	2,499	8,987	2,195	14,899	475,062	218,552	256,510	-66,098
Delta	1,262,329	942,022	240,421	17,818	38,934	10,327	8,119	1,240,766	585,597	655,169	21,563
Eastern	5,009,512	4,387,956	268,386	112,392	159,620	40,479	28,227	5,390,963	2,799,966	2,590,997	-381,451
Hawaiian	240,928	191,838	2,627	9,656	21,692	5,471	1,999	275,528	107,673	167,855	-34,599
Inland*	218,390	152,484	60,468	1,922	1,689	1,368	. . . .	180,876	76,885	103,991	37,514
MCA	605,076	443,033	134,834	5,149	9,772	3,509	6,281	578,537	258,491	320,046	26,539
National	948,938	740,691	144,861	27,415	14,917	10,950	2,605	1,133,880	592,310	541,570	-184,942
Northeast	447,889	276,007	134,005	6,102	5,879	405	-619	495,792	247,596	248,196	-47,903
Northwest	2,179,820	1,767,861	248,079	46,820	88,587	12,234	3,112	2,994,936	1,541,377	1,453,559	-815,116
Trans Pacific	53,738	26,352	. . . .	83	3,071	718	22,999	77,375	29,555	47,820	-23,637
TWA	4,585,430	3,680,003	431,915	131,961	224,825	41,970	48,444	4,875,166	2,268,539	2,606,627	-289,736
United	6,379,919	5,144,312	538,896	190,519	365,778	41,170	56,104	6,940,433	3,195,693	3,744,740	-560,514
Western*	786,340	480,273	149,236	11,787	8,688	3,176	125,382	738,155	372,376	365,779	48,185
TOTALS	35,637,651	28,241,885	3,875,568	835,345	1,735,981	267,350	459,482	37,942,118	18,546,363	19,395,755	-2,304,464

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.

U. S. International Airline Traffic for November

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	U. S. MAIL TON-MILES *	FOREIGN MAIL TON-MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	6,317	4,628,000	8,641,000	53.56	10,303	3,318	831	99,279	621,167	1,143,876	54.30	175,777	175,777	100.00
Amer. O'Seas	9,092	13,293,000	23,208,000	57.28	108,809	43,057	222,716	. . . .	1,851,788	3,063,492	60.45	521,797	505,274	97.18
Braniff	1,116	2,706,000	7,783,000	34.77	1,345	668	. . . .	33,086	295,733	1,112,208	26.59	167,959	167,959	100.00
C & S	1,526	1,799,000	7,318,000	24.58	2,060	581	. . . .	32,031	220,197	878,153	25.08	177,811	178,417	99.66
Colonial	665	520,000	2,100,000	24.76	743	129	. . . .	1,540	58,680	308,160	19.04	47,725	54,716	87.22
Eastern	809	841,000	3,050,000	27.57	6,513	. . . .	. . . .	145,171	236,598	961,522	24.61	93,820	62,400	100.00
National	3,235	936,000	2,009,000	46.59	1,001	. . . .	22,246	. . . .	119,345	280,259	42.58	40,790	34,680	100.00
Northwest	2,844	5,589,000	10,624,000	52.61	177,585	15,544	8,085	460,809	1,274,262	1,965,409	64.83	492,619	480,396	99.97
Panagra	7,489	8,383,000	17,393,000	48.21	23,413	17,922	171,526	. . . .	1,149,536	2,339,673	49.13	475,944	474,296	98.98
Pan American														
Latin Amer	45,852	37,362,000	80,260,000	46.55	221,899	47,554	1,846,046	117,029	6,084,572	12,915,015	47.11	2,360,290	2,071,341	99.32
Atlantic	8,766	22,032,000	43,740,000	50.37	229,277	80,513	704,651	. . . .	3,484,511	6,908,872	49.79	1,252,155	1,284,718	94.02
Pacific	5,524	14,820,000	34,267,000	43.25	412,752	65,911	403,774	. . . .	2,399,350	5,162,624	46.48	904,922	929,376	96.99
Alaska	2,582	2,626,000	4,810,000	54.59	32,508	. . . .	328,390	. . . .	633,266	1,122,271	56.43	178,510	179,118	99.66
TWA	6,673	18,245,000	30,656,000	59.51	214,416	116,870	467,529	. . . .	2,817,741	4,187,633	67.29	911,135	907,311	98.05
United	1,439	3,454,000	8,535,000	40.47	54,469	. . . .	29,756	. . . .	452,888	929,160	48.74	201,679	206,479	97.68
TOTALS	103,929	137,234,000	284,394,000	48.25	1,497,093	392,067	4,205,552	888,945	21,699,634	43,368,327	50.03	8,002,933	7,712,258	97.80

* Includes air parcel post.

NOTE: Data in above tabulations were compiled by American Aviation Publications from monthly reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient, and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

U. S. Feeder Airline Revenues & Expenses for November

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
All American	$ 180,308	$ 61,642	$ 114,304	$ 3,125	$ . . .	$ 193	$ . . .	$ 288,727	$ 150,187	$ 138,540	$ -108,419
Central	55,035	2,881	52,124	. . .	. . .	. . .	. . .	44,648	18,026	26,622	10,387
Challenger	96,145	29,585	62,637	1,128	1,475	202	952	110,060	57,609	52,451	-13,915
Empire	75,608	24,553	49,070	432	. . .	143	1,334	73,106	38,396	34,710	2,502
Mid-West	21,276	1,206	20,021	. . .	. . .	1	48	30,720	17,787	12,933	-9,445
Monarch	134,925	32,080	97,999	483	2,002	66	2,254	134,879	68,341	66,538	46
Piedmont	195,359	98,288	86,983	1,500	1,961	987	354	221,169	129,016	92,153	-25,810
Pioneer	286,784	133,817	131,216	1,600	2,985	831	12,972	237,809	116,703	121,106	48,974
Robinson	72,298	40,234	30,580	. . .	645	71	834	82,436	33,121	49,315	-10,138
Southern	115,162	20,894	93,161	1,017	. . .	90	. . .	145,218	84,325	60,893	-30,056
Southwest	181,593	75,532	98,714	1,115	2,820	262	2,797	180,265	88,975	91,290	1,328
Trans Texas	201,589	52,832	146,553	692	1,718	441	. . .	223,098	111,213	111,885	-21,509
Turner*	11,056	2,450	8,581	20	. . .	6	. . .	18,585	7,322	11,263	-7,528
West Coast	87,421	28,366	58,097	342	. . .	73	. . .	99,052	46,502	52,550	-11,631
Wiggins	9,039	740	8,299	. . .	. . .	. . .	. . .	14,204	7,068	7,136	-5,164
Wis. Central	121,088	22,494	97,934	511	. . .	94	. . .	131,634	70,875	60,759	-10,546
TOTALS	1,844,686	627,594	1,156,273	11,965	13,606	3,460	21,545	2,035,610	1,045,466	990,144	-190,924
					Helicopter Mail Service						
Nal. Air Serv.	**	. . . .	**	. . .	. . .	. . .	. . .	24,149	15,407	8,742	**
Los Angeles	29,986	. . . .	29,986	. . .	. . .	. . .	. . .	40,194	27,641	12,553	-10,208

* Began operations November 12, 1949.

** Mail rate not yet set by Civil Aeronautics Board.

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Automobile Rental Service Offered Airline Passengers

The Avis Airlines Rent-A-Car Service, of 12625 Grand River Avenue, Detroit, is now offering, on an Air Travel Card credit basis, automobiles for rent at many of the major airports of the country.

Warren Avis, president, states that rentals are on an "at the airport basis" and that his company will deliver a car to the airport, at no extra cost to the patron, where reservations are made in advance. In most cases, cars are held in reserve at the airport for the benefit of airline patrons. Avis said his company was receiving the cooperation of the airlines in providing this service.

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Displayed Advertising: $10.00 per inch for less than 15 inches in one issue or in any 12-month period. For more than 15 inches, $8.50 per inch; more than 30 inches, $8.00; more than 60 inches, $7.50; more than 90 inches, $7.00; more than 120 inches, $6.50. Space units up to full pages accepted in this section for classified-type advertising.

Forms close 20 days preceding publication date. Address all correspondence to Classified Advertising Department, AMERICAN AVIATION PUBLICATIONS, 1025 Vermont Ave., N. W., Washington 5, D. C

HELP WANTED

TRAFFIC AND RESEARCH MAN: Wanted a traffic man with original, practical ideas suitable for feeder airline operation. Also wanted is a man capable of building exhibits for various proceedings before the CAB. Both must have experience in their respective fields and be able to approach problems peculiar to feeder operations from a practical and economical standpoint. Do not call, write: Keith Kahle, President and General Manager, Central Airlines, Inc., 6109 Camp Bowie Boulevard, Fort Worth, Texas.

ASS'T MANAGER—SCHEDULES & TARIFFS Airline experience in developing schedules and preparing and maintaining tariffs required. Write, giving experience and education, Box 684, AMERICAN AVIATION, 1025 Vermont Avenue, N. W., Washington 5, D. C. This opening known to Company employees.

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FOR SALE—Steel hangar buildings, size 148' x 162', new and packaged for shipment with lights and erection tools. Also one hangar size 194' x 200'. Priced for quick sale. Send for photos and specifications. We will erect anywhere. Anderson Aircraft, 1700 Sawtelle Blvd., Arizona 3-2681, Los Angeles, Calif.

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WINGS OF YESTERDAY

25 Years Ago

The new commercial aircraft manufacturing firm formed in Wichita, Kan., by Walter H. Beech, Walter Innes, Jr., Clyde Cessna, and Lloyd Stearman was incorporated under the name of Travel Air, Inc.

•

The aircraft interests of Walter T. Varney and the Checker Cab Co., both of San Francisco, were consolidated as the Checker Air Service Co. for the purpose of operating a taxiplane service to any point of the West Coast.

•

Lawrence D. Bell, vice president and general manager of The Glenn L. Martin Co. since 1921, resigned to associate with his brother in operating a chain of West Coast department stores.

•

The Air Service Engineering Division invited American designers and manufacturers to submit bids for a four-place heavy bombardment airplane to be built around the 800-horsepower Packard 1A2500 engine.

10 Years Ago

(In AMERICAN AVIATION)

Bell Aircraft Corp. delivered its first P-39 Airacobra, the first single-engine pursuit plane to carry a cannon, to the Army Air Corps. Maximum speed was revealed as "around 400 miles per hour" and operating altitude was given as more than 36,000 feet.

•

Backlog of the aircraft manufacturing industry was esitmated at $625 million by the Aeronautical Chamber of Commerce, compared with $125 million for the previous year.

•

A mission from four Scandinavian countries discussed with the State Department, Post Office and Civil Aeronautics Authority a proposal for a jointly-operated Scandinavian airline connecting the northern countries with the United States.

•

Founding of what was expected to become the most comprehensive aeronautical archives in the world was announced by the Institute of the Aeronautical Sciences. W. A. M. Burden loaned his private collection of about 10,000 books, magazines, photographs, reports and clippings to the project.

BOOKS

DISASTER THROUGH AIR POWER, by Marshall Andrews, military writer for the Washington Post. Published by Rinehart & Company, Inc., New York, N. Y. 143 pages, $2. *(See page 24)*

AIRPLANE PERFORMANCE, STABILITY AND CONTROL, by Courtland D. Perkins and Robert E. Hage. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 485 pages, illustrated. $7.

A well-written book covering airplane performance and airplane stability and control has been authored by Perkins and Hage. The gradual development of the text through its application as a manuscript in actual classroom work with the Air Force Institute of Technology is evident in the logical approach which is used to present the material. The material has also been in use for the past three years in undergraduate and graduate course instruction at Princeton University. The first part of the book deals in basic aerodynamics covering estimation of drag in all speed ranges, propulsion characteristics of conventional engines, turbine engines and rockets. The second part deals in stability and control problems related to designing flying qualities into the aircraft. While this part does deal in subsonic flight analysis, transonic and supersonic stability and control have been omitted as premature.

AIRCRAFT MAINTENANCE AND SERVICE, by Col. R. H. Drake. Published by The MacMillan Co., 60 Fifth Ave., New York, N. Y. 350 pages, illustrated. $6.

This is the sixth volume in a series of seven to be authored by Drake. As a partial presentation to be integrated with the entire group it may serve the exact intent of the author. As an individual book for sale at $6, it leaves much to be desired alongside other publications which provide greater coverage of more subjects. Drake, in this volume, deals primarily with materials used in aircraft construction and how these are worked. Typical of the chapters are twenty pages devoted to plywood, 13 pages for a general glossary, 27 pages on wood, etc. Drake is well qualified to write on these subjects, having been chief of the Airman Agency unit of CAA during the war. He also served as senior technical examiner for the U. S. Civil Service Commission.

HELICOPTER ENGINEERING, by Raymond A. Young. Published by The Roland Press Co., 15 E. 26th St., New York 10, N. Y. 255 pages, illustrated. $10.

Young's book is a worthwhile contribution to existing literature on helicopter engineering. Much of the data in this 255-page volume have been obtained from reports of NACA and other organizations. Such data have been analyzed, and accepted design methods, based on theory and results of research, have been presented in an interesting sequence. 163 charts are used in the presentation, providing a valuable group of reliable references for the designer and engineer. Young has divided his work into two major parts with the first devoted to theory and performance of helicopters and the latter covering structural design theory and application.

LETTERS

Jet Simulators

To the Editor:

I want you to know what a good job I think Jim Haggerty did with our Link Jet Instrument Trainer story in your February 1 issue.

While our story was but one of many which your publication has handled in this fashion, I think that bouquets are in order for it.

THEODORE E. MULFORD,
Link Aviation, Inc.
Binghamton, N. Y.

Air Marking

To the Editor:

I wish to express my appreciation for the fine article by B. J. Ward, "Air Marking Progress," which appears in the January 15 issue of *American Aviation*.

The article is comprehensive in scope and I feel that it will give many readers a clearer understanding of air marking and its technical aspects.

BLANCHE NOYES
Chief, Air Route Marking Branch
Civil Aeronautics Administration

Intrastate Analysis

To the Editor:

We would certainly like to commend Fred Hunter for his excellence in reporting the recent Public Utilities Commission analysis on the intrastate operators in California (Jan. 15, p. 15).

We feel it was most objective and refreshing in its approach to the so-called "mass market." It was a comprehensive and detailed analysis, and Mr. Hunter's work in bringing out the pertinent points was especially good. I hope the industry reads this story with the same interest that we have in it.

ARTHUR F. KELLY
V. P.-Sales
Western Air Lines, Inc.
Los Angeles, Calif.

NPA Adopts New Name

The National Pilots Association has changed its name to the International Professional Pilots Association to reflect more accurately its growing membership embracing pilots of scheduled and non-scheduled lines, domestic and international. The organization had originally represented only pilots of National Airlines.

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En Route

(*Continued from Page 58*)

was reddish, the vegetation not so lush and the terrain was very hilly. It wasn't at all like the Africa of the day-dreams.

✦ ✦ ✦

All to Bed. By mid-day we had landed at **Mbeya,** in southwestern Tanganyika. The passengers and crew piled into a very rickety old automobile and we bumped our way over dirt roads to a rambling little hotel or rest house on the edge of the village. A delicious lunch of cold cuts awaited us. After that everybody seemed to disappear and before long I realized that passengers, crew and hotel management had all gone to bed. After wandering around the sleepy little village for a half hour or so, I decided I might as well go to bed too. About five o'clock a barefooted native shuffled in with hot tea and cakes.

This new wrinkle of air travel didn't seem so bad. After all, nobody was in a hurry. So why not fly half a day, eat and sleep the rest of the day, and resume the travel next morning. I see by the latest Central African schedules that Mbeya is no longer a stop on the Nairobi-Salisbury route, it being now a terminus for the coastal service.

A sign in the Mbeya "hotel" or rest house advertised a two-hour flight in a British Auster lightplane to see elephants and if you didn't see elephants the money would be returned. The hotel owner was also a pilot and he could hardly miss on his guarantee because Mbeya is in a region with a big elephant population.

As far as Mbeya is concerned the village consisted of one unpaved dirt street and a few "stores" and some shacks. Its sole claim to existence, apparently, was that it had an airfield and was on the only north-south highway (unpaved and rough) in Africa.

A touring party stopped at the hotel when we were there, dusty and decked out like the automobile tourists of the U. S. of about 1913. Traveling isn't easy over there even now. A paved highway is nothing but a dream.

C&S Charges Resort Airlines With Unfair Competition

Chicago & Southern Air Lines, in a complaint filed with the Civil Aeronautics Board, charges that Resort Airlines, newly certificated all-expense air tour operator, poses as a regularly scheduled airline in its advertisements and as a nonscheduled operator when seeking landing rights in Caribbean countries. If Resort is to obtain such rights at all, it should be required to do so, C&S said, as a scheduled operator.

It declared that if Resort were permitted to continue to hold itself out as a nonscheduled carrier, it would be able to obtain overnight the operating authorizations which C&S, which is certificated to serve the same general territory as Resort, has been unable to obtain in four years.

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1 ea. B-26-C Martin Low Time, Long Range Tanks. Flyaway $12,000
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1 ea. C-54-A Nose Section, Front 200″ Good Condition $5,000
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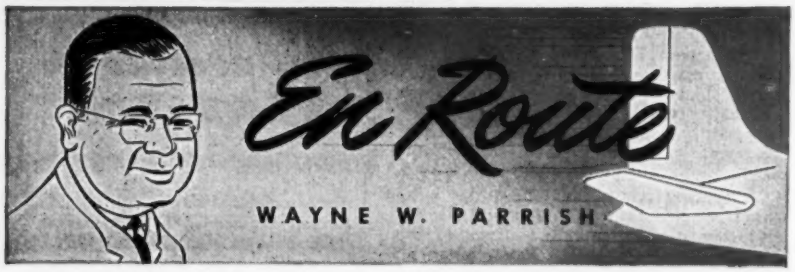

Ice in Africa. All you good folks who gathered at the check-in counter here last issue for an air trek through **Africa** will recall that we got as far as **Kenya Colony.** So let's go on from there.

At 3 o'clock on the second day south of Cairo our BOAC Lodestar landed at Eastleigh Airport on the east side of **Nairobi** and I gaily entered the cottage-like airport terminal for customs and immigration. I can't say that the reception was warm, in fact it was the coldest I've ever had anywhere, anytime. Customs was easy but the immigration officer, a stiff formal colonial Britisher, thumbed through my passport and looked directly at me through steely cold eyes and said slowly in firm and measured words, *"Why*—have—you—come—to—Kenya—Colony?"

He really had me there. I was so taken aback by this chill welcome that for a few seconds I couldn't find anything to say. Just why, as a matter of fact, *was* I there? Certainly I looked as though I had just gotten up from my desk in Washington to go across the street for a cup of coffee. There seemed to be no doubt that he thought I was a Communist or a New Dealer or some mysterious agent who had come to upset the calm of Kenya Colony.

Finally I managed to blurt out that I was just stopping over for a few days to see the country. When he found out that I had a ticket and reservation to depart for points south he relaxed and cleared me. This was not my first nor last experience with that narrow petty type of British colonial who dislikes all outsiders whether they be the English from the homeland or Americans or whatnot.

✣ ✣ ✣

Wake Up With Tea. My hotel was the Norfolk, a rambling old place with cottages and a small bit of charm. But by mistake my reservation had been made for one night only and no amount of cajoling would change the mind of the firm lady running the desk. Next morning I was bounced out and managed to get a room at Torr's Hotel downtown. My room was bare and the lavatory accessible to me was also accessible to half the town. The food was poor. If you perchance ever go to Nairobi, the Norfolk Hotel is by all odds the No. 1 choice and the New Stanley is second.

It was in Nairobi that I discovered a new slant in this English tea habit. At the crack of dawn a barefoot native enters your room with tea and cakes whether you want it or not. The first time this happened I was burned up at being awakened at such an ungodly hour, but it isn't such a bad custom, I found out in time. Drink your tea, go back to sleep for an hour and you wake up quite refreshed.

Nairobi has a population of about 25,000, a mixture of European, African and Asiatic. That was the big surprise to me, to find not only a big population of East Indians in this interior colony of Africa but to find that they had absorbed just about 95% of all retail business in the town. Brought to Kenya originally to work the farms, the Indians multiplied like rabbits and soon became traders. They are now virtually the dominant business force in the colony. The class or racial distinction in Nairobi is very sharp. In the south of the U. S. we have toilets marked for white and colored. In Nairobi at the airport there were three separate toilets for Europeans, Asiatics and Africans.

✣ ✣ ✣

Giraffes by Jeep. Nairobi is quite important trading center for a wide area. There are virtually no cafes and not much to do in the way of amusement. There are a couple of movies which have one evening performance each at 9 p.m. and show advertisements on the screen before the main feature and during the intermission. As in most British movie theaters, the film is cut midway so the customers can buy lemon squash or a brandy or candy. Also as in most British theaters the most expensive seats are in the balcony.

Although the town may be dull in itself, there's no lack of wild life nearby. The only jeep in Kenya Colony belonged to the U. S. Consulate. A U. S. Army colonel, whose name I've regretfully forgotten, happened to be in Nairobi settling some wartime matters with the colony. The two of us decided to go looking for big game. It wasn't hard to find.

One of the big African game preserves extends south of Nairobi and it seems that the railroad line which runs from the town to the Indian Ocean to the east is the dividing line between the preserve and open-season hunting. The colonel and I headed out south of town and within a mile or two left the road and headed out over the open country. The town itself was in full view and there wasn't a semblance of a fence separating the wild life from the town.

During one afternoon of rambling over the countryside in the jeep we found ten recognizable types of wild life. There were hundreds of zebras, quite a few herds of giraffes, impalas, elands, two kinds of gazelles, bustards, secretary birds, wildebeests and kongoni, all within a mile or two of Nairobi. Elephants are in abundance but not so close to town. There are lions also, but we failed to flush any and it's probably a good thing we didn't. I didn't exactly resemble a big game hunter sitting in that jeep in my business suit.

✣ ✣ ✣

Chopped Gorilla. In the town is the Coryndon Museum which has quite a good collection of flora and fauna of the area. The director took me into the laboratory to show me the cut-up parts of a big gorilla that had been captured shortly before in the jungle area north of Nairobi. He was a tough old animal that had become quite vicious and was preying on farms so an expedition was sent to get him. There were only about 25 gorillas left in that region, I was told. So here were the remains of the old boy, about to be stuffed. The meat hadn't been fully cleaned off his bones and the odor was something terrific.

I paid my respects to East African Airways, a new outfit just struggling to get into full operation after the war. The new company was owned by the governments of Kenya Colony, Uganda, Tanganyika and Zanzibar and was taking over the routes operated before the war by Wilson Airways. The airline had a fleet of six de Havilland 5-passenger Dominies and I can't say that I was very highly impressed with what I saw of the management or of government ownership of that kind. I suppose by this time EAA is in much better shape.

✣ ✣ ✣

No Breakfast. After a few days in Nairobi I was all set to take off in Central African Airways (owned by Southern and Northern Rhodesia and Nyasaland) for a two-day trip to **Salisbury,** capital of Southern Rhodesia. The schedule operated only twice a week. I was up at 6 a.m. and had a cup of tea, but there was no possibility of getting breakfast anywhere in Nairobi before the station wagon pickup downtown at 7 a.m. So I assumed breakfast would be available at the airport or on the airplane. Takeoff was 8 a.m. and no breakfast anywhere in sight. Our plane was a 6-passenger Avro Anson, the familiar twin-engined training ship used by the British and Commonwealth in the war.

At 10:40 a.m. we reached our first stop at a place called **Tabora** in **Tanganyika.** By this time my insides were aching from lack of food. We were taken into a small cottage on the edge of the airfield where there were table and chairs but no sign of food. But a car drove up and a native took out a big box and brought it into the cottage.

Out of it he took table cloth, plates, cups and saucers and some tea and a few other items including, principally, some sandwiches. The milk for the tea was sour and the butter for the sandwiches was rancid, but I managed to eat some of them and stuff myself with small green bananas. It wasn't much, mother, but it was something. Life in Africa has its grim aspects on occasions.

Much to my surprise the terrain south of Nairobi became increasingly arid, something like New Mexico. The soil

(*Turn to Page* 57)

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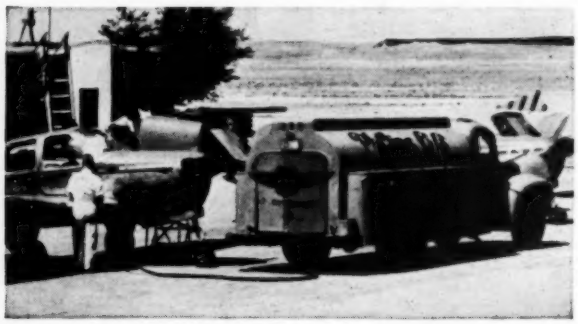
Carco Air Service probably carries more "brains per mile" than any other airline . . . and uses Phillips *66* Aviation Gasoline exclusively.

Clark M. Carr, owner and manager of Carco Air Service, has had a colorful 22-year career . . . barn-storming, making aerial surveys, selling and servicing aircraft in South America, and serving as captain in the Army Air Corps!



This unique "airlift" began operations in 1947 as an "on-call" charter service for the Atomic Energy Commission. It now carries an average of 1,000 passengers, plus 3,000 pounds of United States mail per month.

TOP ATOMIC SCIENTISTS are flown in and out of Los Alamos via the Carco "airlift." This miniature airline operates light, single-engine Beechcraft Bonanzas (carrying a maximum of 3 passengers per plane) over the mountains to Albuquerque. Rigid inspections, strict maintenance standards, and high-quality Phillips *66* Aviation Gasoline help Carco complete 97 per cent of their scheduled 6 round trips a day.

The same qualities which make Phillips *66* Aviation Gasoline the choice of many commercial airlines, both big and little, have made this quality fuel popular with private plane owners, too. Whether you fly for fun or business, you can rely on dependable Phillips *66* Aviation Products.

Phillips 66

AVIATION PRODUCTS